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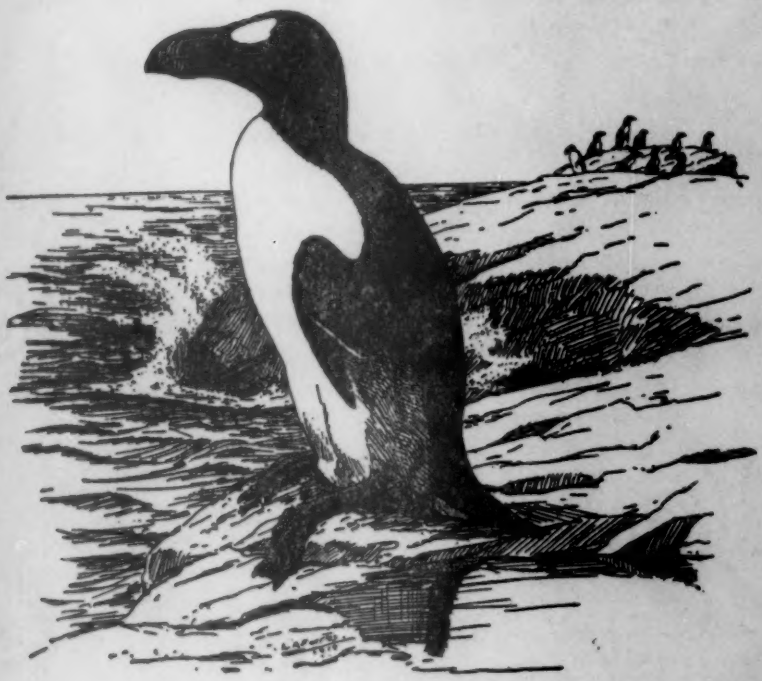

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CONTENTS

MEMORIES OF WILLIAM EDWIN SAUNDERS. By *P. A. Taverner* (Plate 13) . . . 345

BIRDS OF THE KATMAI REGION, ALASKA. By *Victor H. Cahalane* 351

PRELIMINARY NOTES ON THE DEVELOPMENT OF NESTLING PILEATED WOODPECKERS. By *J. Southgate Y. Hoyt* (Plates 14, 15) 376

NEST SURVIVAL OVER WINTER. By *H. Elliott McClure* 384

CROSS-MATING OF CANADA GEESE WITH EMDEN GEESE. By *Alexander W. Blain* (Plate 16) 389

THE RECORDS OF A PROFESSIONAL DUCK HUNTER. By *Harold B. Wood* 391

A TWO-YEAR BIRD CENSUS ON SAN JUAN ISLAND, WASHINGTON. By *Malcolm R. Miller* 395

THE TYPE-LOCALITIES OF SOME MEXICAN BIRDS OF THE GENERA *Aphelocoma, Cyanocitta,* AND *Peucedramus.* By *Pierce Brodkorb* 400

TWO NEW SUBSPECIES OF *Catharus aurantiirostris.* By *John T. Zimmer* 404

STATUS OF CASSIN'S SPARROW IN ARIZONA. By *Allan R. Phillips* 409

TICKS AND OTHER PARASITES ATTACKING NORTHERN CLIFF SWALLOWS. By *W. J. Baerg* (Plate 17) 413

THE RELATION OF SELENIUM TO WESTERN DUCK SICKNESS. By *H. W. Lakin, E. R. Quortrup,* and *Neil Hotchkiss* 415

OCCURRENCE AND DISTRIBUTION OF THE TREMATODE *Collyriclum faba* (BREMSER) IN BIRDS. By *D. S. Farner* and *B. B. Morgan* 421

BROOD HABITS AND GROWTH OF 'BLUE GROUSE'. . By *Leonard Wing, James Beer,* and *Wayne Tidyman* 426

NINETEENTH SUPPLEMENT OF THE AMERICAN ORNITHOLOGISTS' UNION CHECK-LIST OF NORTH AMERICAN BIRDS 441

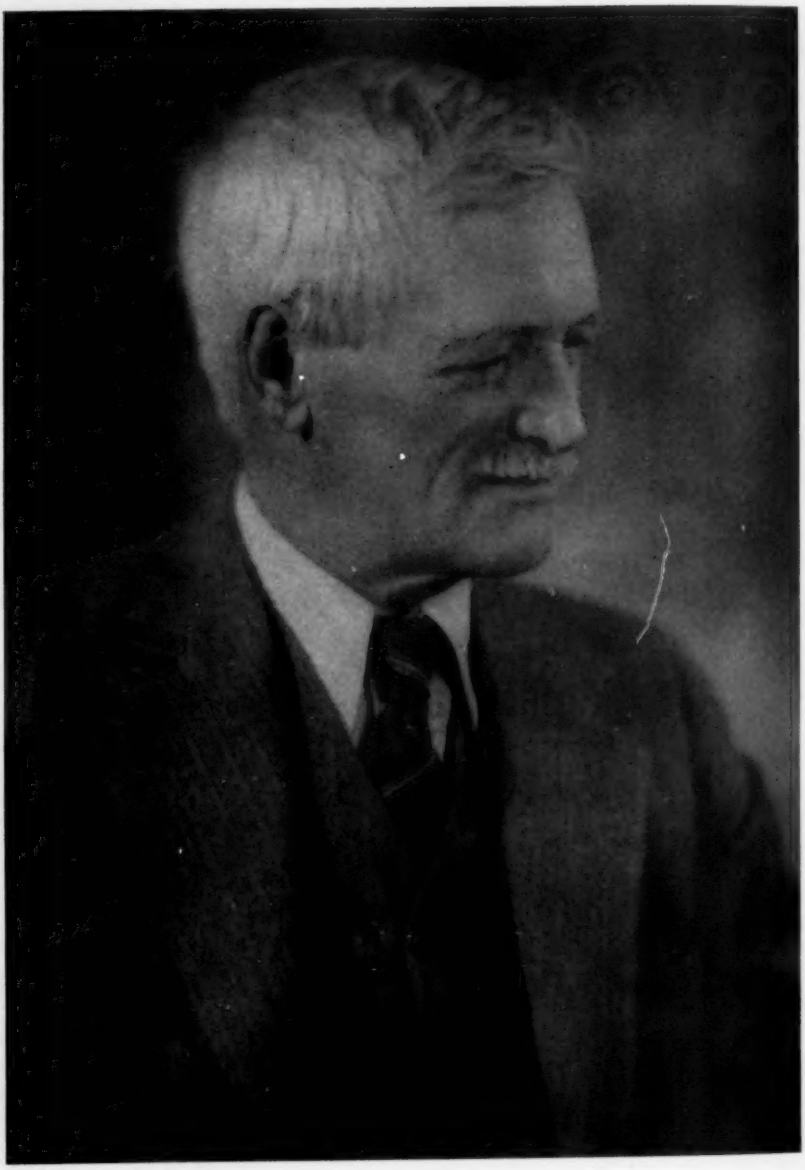
GENERAL NOTES.—The family name of the Australian Honey-eaters; The Parasitic Jaeger (*Stercorarius parasiticus*) (Plate 18); A peculiar injury to a Robin (Plate 18); Bald Eagle nesting in Illinois; American Avocet in Illinois; Western Grebe (*Aechmophorus occidentalis*) in Illinois; Sycamore Warbler in Ontario; The European Starling in central Saskatchewan; A Sparrow Hawk in Costa Rica in July; Barn Swallow in Costa Rica in July; Glossy Ibis near Toledo, Ohio; Connecticut records; Two records from Newfoundland Labrador; Blue-winged Teal at sea; Extension of breeding range of the Western Burrowing Owl in Saskatchewan; Forster's Tern in central-western Ohio; Yellow Rail in Rice County, Minnesota; Notes from South Carolina; Red-breasted Merganser devoured by angler fish; Some instances of bird tragedies; 'Courtship feeding' by the House Finch; Observations on the courtship of four woodland birds; Corrections to the ornithological writings of W. L. McAtee 465

RECENT LITERATURE 483

CORRESPONDENCE.—Bird-banding Societies; A plea for the name 'Blue Grouse' . . 502

OBITUARIES: Edward Bartlett; Franz Ernest Blaauw; Michael Alexandrovich Menzbier; Harry Forbes Witherby; George Shiras, III; John Kingbury Burgess; Chester Sessions Day; William Butts Mershon; Leonard Elmer Burnett; Harry Alvin Cash; William Wellington Coe; Nathaniel Atwood Francis; Albert Burton Gresham; Norman James 504

NOTES AND NEWS 512



W. E Saunders.

THE AUK

A QUARTERLY JOURNAL OF

ORNITHOLOGY

VOL. 61 JULY, 1944 No. 3

MEMORIES OF

WILLIAM EDWIN SAUNDERS

1861–1943

BY P. A. TAVERNER

Plate 13

WITH the passing of W. E. Saunders on June 28, 1943, the American Ornithologists' Union lost one of its oldest Fellows, ornithology an outstanding field man, Canada a most picturesque and interesting character, and we a loved and valued friend. He was buried in Mt. Pleasant cemetery in his home city of London, Ontario. May he rest in peace beneath the flowers and birds that he loved and knew so well.

Will Saunders ("W. E." to many of us) was born in London, Ontario, August 16, 1861, a member of a rather notable family. His father, William Saunders, came to London from Devonshire, England, in 1849, when twelve years old. With limited academic training, he entered employment in a pharmacy, learned the profession the old-fashioned practical way and, when eighteen, set up in the drug business for himself, a business that, under son William, has persisted to date. He married Sarah Agnes Robinson, the daughter of a Methodist minister and also of English extraction. Probably as a result of the old-time pharmacist's close interest in the plants and herbs from which he made his own tinctures and extracts, he grew deeply interested in botany, plant growing and experimental agriculture, and became active in their economic development. He soon won an outstanding place in local and Dominion affairs. He was a Founder of the Entomological Society of Ontario and of the Ontario College of Pharmacy, Professor of Materia Medica at the University of Western Ontario, served as 1906 President of the Royal Society of

Canada, and was honored by the King with a C.M.G. It was largely through his initiative and insistence that the first Federal Experimental Farm in America was established at Ottawa in 1886 with himself as Director. With such a father it is not surprising that the family should be capable of important accomplishment. There were five sons and one daughter and all the boys subsequently achieved success in various lines of artistic and scientific endeavor: Henry S. Frederick A., Arthur P., who survive him, and the late Charles E. (afterwards Sir Charles)—all have won important posts in science and art. Charles achieved world-wide fame in carrying to success plant-breeding experiments initiated by his father, particularly in developing Marquis Wheat, a superior strain of grain that extended wheat-growing possibilities far northward, an achievement of incalculable value to Canada and to the rest of a hungry world, and definitely postponing the Malthusian catastrophe.

While the rest of the family carved their individual ways, it remained for William, the eldest son, to take charge of the family pharmacy and manufacturing chemical business which he continued in able active management to the day of his death and built up into a substantial institution. He attended London, Dundas, and Trinity College schools, graduating with honors from the Philadelphia College of Pharmacy. He became Professor of Practical Chemistry at the London Medical School, then affiliated with the University of Western Ontario. In 1936 that University, for "outstanding contributions to society," conferred upon him an honorary LL.D. But he, no more than the rest of the family, dug into narrow grooves. All were catholic in their tastes and, as long as they remained in close contact, each assisted the other in botany, entomology, plant-breeding, nature-study and in music. After the father passed in 1914, as a rallying center biennial family meetings were held in turn in the scattered residences when music was the serious feature. Each had some skill to contribute and could form part of a chamber group or small orchestra. Parts were previously sent around for study and practice and the meetings consisted of several days of serious ensemble music as well as of family reassociation. Such is the background that produced the interesting and distinctly lovable character of William E. In 1885 he married Emma Lee, also of English descent, who survived him less than seven weeks to August 13, and by her had one daughter, Mrs. Muriel Fetherstone, now a widow still occupying the family house in London. He had previously donated much of his collection to the National Museum at Ottawa and to the University of Western

Ontario. The remainder he left to the Royal Ontario Museum of Zoology of Toronto.

William, in his early days, dabbled slightly in entomology and botany but finally settled upon ornithology and mammalogy as his favorite interests. We, as ornithologists, know him more for his bird work, but it should not be overlooked that his interest in mammals was only secondary to that in birds, and he seldom strayed far from home without a pocketful of traps that he conscientiously set in every new or promising locality. He was among the seven Active Members (now known as 'Fellows') elected at the first regular meeting of the A.O.U. and he and T. S. Roberts were the only surviving Fellows of that vintage; in fact, only two Founders, A. K. Fisher and C. H. Batchelder, to date exceed him in length of service to the Union. He was a constant and rather prominent attendant at annual meetings where he was known to all, and often took a trenchant part in discussions, especially in life-history and conservational subjects, though he rarely read a formal paper before the society.

He was an ardent field worker and took many long walking, bicycle, or other trips, alone or in company with congenial spirits, lodging as he could or even bivouacking where night found him. In this way he covered many miles in out-of-the-way parts of his province. Incidentally, he traveled rather widely on this continent, three times to the Canadian Pacific coast, several times to Alberta, and to Florida, Louisiana, Tennessee, and once to England, always with eyes and ears open to birds and with a bunch of traps for small mammals.

He was a constant writer of short notes and articles in 'The Auk' and other current nature periodicals and took care that his important findings were placed on permanent record; his bibliography in birds runs to over 163 titles. In 1882, in collaboration with J. A. Morden, he produced a 'List of the Birds of Western Ontario' in the 'Canadian Sportsman and Naturalist' as his first serious contribution to ornithological literature. In 1901, on an investigational expedition with his father, he visited Sable Island, off the Nova Scotian coast, and gave one of the first accounts of that, until then, practically unknown American Heligoland of waifs and strays in 'The Ottawa Field Naturalist,' 16: 15–31, 1902. He also wrote considerably on its particularly interesting species, the Ipswich Sparrow, known to nest nowhere else. For a number of years he ran a popular nature series in his local press under the title of 'Nature Week by Week' that won widespread interest, but probably his most important contribution to ornithological literature was in association with the late E. M. S. Dale in

'The History and List of the Birds of Middlesex County, Ontario, 1933,' wherein he finally embodied all the experience of his years of observations in southern Ontario.

This writer first came into close personal association with Saunders in March, 1905, when, with B. H. Swales and A. B. Klugh then of Guelph, Ontario, he visited him at London and spent a week-end in furious bird talk and in reviewing his quite considerable private collection of study specimens. Will told us of the remarkable faunal and floral aspects of Point Pelee, that long sandbar from the southernmost point of the Canadian mainland stretching toward the island steppingstone across western Lake Erie, that he had visited and first discovered in 1882. A trip to the locality was planned and, the following May, Swales, Saunders, and the writer drove to the base of the point and worked across the marsh at its base and out the east shore. We bivouacked in the red cedars near the tip in the rain. This was our introduction to Will's irrepressible optimism and enthusiasm. Under a continuous misty rain, his clothes under a bit of waterproof oilcloth at his side, and naked as when born, before a spluttering campfire on which a 'billie' simmered, he skinned the birds of his day's take, and persisted that there was no such thing as "bad weather," only our "lack of appreciation of it." The following day continued much the same, only more so towards the end. We supped on frogs' legs collected on the way and cooked over an open fire and, as we plodded the nine tired miles through the dark drizzle towards a warm, dry hotel with bath and bed, through clay roads that loaded each foot with growing pounds of sticky mud, he still proclaimed his thesis. Through the day I had lost my pipe, a calamity any confirmed smoker can appreciate; Will, a non-smoker, non-drinker, but a puckish humorist, punctuated proceedings with a reiterated, "Come now, let's have a smoke."

The contact thus initiated was continued and further developed. Pelee was visited many times—at one time for a week in the fall by a slightly larger and better equipped party. This time rain was not the disturbing element, but we ran into a particularly vicious and, for the season, unusual brood of nocturnal mosquitoes. Smudge smoke only maddened them, and the tent without mosquito-bar but confined and concentrated them to more deadly attack. The kindliness of modern fly sprays to the camper was unknown in those days. But with eyes red with smoke and face bloated with bites, Will still affirmed his "lack of appreciation" theme. It was not until the discovery was made that there are no mosquitoes in the haymow and

we took nightly refuge in an adjoining friendly barn, finding welcome surcease from the pests, did he admit that "it was pretty stiff." On another visit, Saunders acquired a basket of peaches from a local orchard to take home with him. On the long drive in behind the faithful dobbins of those days, he dipped and re-dipped into the basket at his feet. Arriving at Leamington and his homeward train there was only a peach or two left in the basket. "But, you know," he said, "those last peaches were hardly worth eating."

From these field meetings grew what we called the "Great Lakes Ornithological Club," a loose correspondence association that finally resulted in the building of the "Shack" as a clubhouse at the Point, details of which are recorded by Fleming in 'The Wilson Bulletin,' 51: 42–43, 1939. However, it was largely through Will's engaging personality and influence that we became *persona grata* on the Point and received the many great and small tokens of friendship from local inhabitants that made our continued presence there possible and pleasant. From then on, meetings and common field experiences were numerous and few holidays or convenient week-ends in season but saw some of us at the Point. The more we saw of Saunders in the field, the greater was our appreciation of him. He had the sharpest of eyes, the keenest of ears, the best of memories for bird sounds, and little escaped him. One day we were sitting in the Shack intent on skinning our trophies; a wren, just outside, was inconspicuously reiterating some of its less familiar phrases muffled and blended with a chorus of other bird medleys. Saunders paused, listened, dropped his scalpel, and was gone. A moment later we heard his gun speak and he returned, laying a Bewick's Wren on the table before us, a second record for Canada. The surprised expletive that greeted this specimen was afterwards an oft-repeated jibe at us, always accompanied by a good-natured smile and a slightly triumphant laugh.

Many were the pleasant and profitable meetings at the Point that continued until shortly after the group began to break up. Swales removed to Washington, I to Ottawa; Fleming was too far removed for many casual or extemporaneous visits. Saunders came less frequently, bringing some of his lately aroused London ornithological friends with him and, when the Point was made a National Park, intensive systematic work there practically ceased. It is regrettable that the preservation of notable scenes and the making of them available to a wider public should so often diminish their usefulness to the more serious students who are often their discoverers and advocates. Some day we will want sanctuaries for the protection of the working naturalist with other interests barred.

With the break-up of the group, Saunders's active but conscientious collecting grew progressively less and his participation in popular education and active conservation increased. His field glasses remained in intensive use but his gun was partially retired. He had the precious ability of making friends with the most unpromising material. He could be fellow to the lowly as to the great without compromise of character. The most unconventional of men and without self-consciousness, he could open up his skinning tools in the corner of a railroad car and skin his birds and mice on his knees, soon having half the car hanging over his shoulders listening with interest to his running commentaries. He once said that he first met one of his best friends in this way.

At home he built up a following among the young and old. Youth recognized in him a congenial spirit; age acknowledged his values. He introduced many to new interests until London became a center of many observers with him as the clearing house and energizer. A word to him on the telephone, and his car was out gathering the elect, and off to verify or observe some new discovery—it might be a Scarlet Ibis reported at Point Pelee or a Least Bittern at the Pond. Nor did his influence remain within city bounds. He visited camps, schools, and nature and social service clubs, lecturing and dropping seeds of wisdom and his own philosophy by the way. He was in early touch with Jack Miner, and undoubtedly some of the latter's first enthusiasm stemmed largely from the Saunders influence. His platform manner was informal, intimate and conversational, and his material largely unprepared, but he had the faculty, with his quiet sincerity and common sense, of capturing the sympathetic interest of his audience without arousing opposition.

Another of his keen interests was horticulture. He was an ardent gardener, particularly of the rarer and more interesting forms of plants, and was a specialist in irises. Sometimes he combined his hobbies as when he covered the berry clusters of the mountain ash in front of his house with paper bags to preserve the fruits from the devouring fall Robins for the benefit of winter visitors. He was unusually generous with his plant treasures and seldom went far abroad without a few rare bulbs or roots for appreciative friends.

With all this he did not neglect more homely civic duties. He served his city on the local Park and Water Commissions, was a member of Rotary, took a lively interest in Y.M.C.A. and his church, and at his death was Honorary President to his local chapter of the Canadian Club of which he was a founder. He filled every moment

with constructive interest, and it does not seem that anyone ever got more out of life or scattered his influence more generously than Will Saunders. Though advancing years slowed his physical activity, they touched him but lightly and he retained his youthful energy and enthusiasms in a remarkable degree. His mental alertness never flagged and he remained a veritable Peter Pan with a kindly humor and sincerity of purpose that never grew old. He leaves a place in ornithology, especially in that of his own country, that it is difficult to fill, and he will long be missed by his intimate friends, casual associates, and others.

Ottawa
Ontario

BIRDS OF THE KATMAI REGION, ALASKA

BY VICTOR H. CAHALANE

INTRODUCTION

IN September, 1940, I was detailed by the Fish and Wildlife Service, by which I was then employed, to make an inspection of the Katmai National Monument on the Alaska Peninsula. The National Park Service, which supplied funds for my travel, has administrative responsibility for the area, and needed general information on natural features, as well as possible illegal occupancy, poaching, and any other violations of regulations. My opportunities for observations of the bird life were therefore limited to those afforded by official travel and the necessity for covering many other subjects. Although it was not possible to make collections of specimens, the sight records and other observations seem worth recording. The area is extremely isolated, and previous observations are few and were usually made earlier in the season when danger of storms is less. I have also tried to include previous records from the region since the original publications are now generally difficult to obtain.

Facilities for my travel in that part of the Monument area west of the Aleutian Range were made possible through arrangements by Dr. Ira N. Gabrielson and Charles E. Jackson, Director and Assistant Director, respectively, of the Fish and Wildlife Service, and Fred R. Lucas, in charge of the Service's Marine Ways at Naknek. Mr. Lucas did everything possible to facilitate the work, and accompanied us during the first few days of our journey in the Monument. He assigned to us the best available boat and an engineer-pilot, Charles Sullivan, whose willing help was much appreciated.

The Shelikof Strait coast of the National Monument, from Katmai to Hallo bays, was visited in the chartered seiner, 'Hazel M.' of Kodiak. My companion on this voyage was N. J. Benson, Wildlife Agent of the Alaska Game Commission. Without his knowledge of the coast, able seamanship, and friendly assistance I could not have covered this region.

During the period of September 1 to 28 I was accompanied by Frank T. Been, Coördinating Superintendent of National Park Service areas in Alaska. Mr. Been is deeply interested in the wildlife and especially the birds of the Monument, and his constant interest and assistance in making many arrangements for our travel were indispensable.

General Description of the Region

With one or two exceptions, the bird records or observations cited in this paper were made on the base of the Alaska Peninsula, as far south as the portage between Ugashik and Kanatak. The northern half of the area is included in the Katmai National Monument (approximately 2,697,590 acres), established by presidential proclamation in 1918 to protect extraordinary volcanic and other natural phenomena. It is a strikingly beautiful wilderness, featured by the chain of mountains known as the Aleutian Range, many of whose peaks rise more than seven thousand feet above sea level. These mountains are relatively close to the eastern edge of the Peninsula. The coast of Shelikof Strait is, therefore, frequently abrupt, rising as cliffs and running back steeply to the glaciers and snow fields on the mountains. Evidences of volcanism are common and several of the peaks smoke intermittently. The culminating feature of interest is Mount Katmai, which exploded on June 6, 1912, in one of the greatest eruptions of historic times. One result of this cataclysm was the devastation of the basin on the western slope of the Range now known as the Valley of Ten Thousand Smokes.

West of the Aleutian Range proper is an irregular mass of hills and mountains, some of which are about a mile in height. Many are plainly extinct volcanoes, such as Mount Ikagliuk. A feature of this region is the extensive system of beautiful, clear lakes: Naknek, Brooks, Coville and Grosvenor, and Iliuk Arm. These lakes, with their rocky islands, bold and sometimes grotesque shore formations, and steep, overhanging mountains, make a very beautiful scene in peaceful contrast to the forbidding snow-covered and smoking volcanoes.

North of the eastern end of Becharof Lake, the Aleutian Range decreases markedly in elevation and width, until the mountains are

squeezed into a narrow strip between Shelikof Strait and Becharof and Ugashik lakes.

Extending from the western foothills to the shore of Bristol Bay is a nearly level tundra. This plain is littered with thousands of lakes, ranging in size from small ponds to the large Becharof Lake, some 33 by 12 miles in extent. Many creeks and rivers wind their slow way across the flats in great serpentine curves, becoming briefly hurried only on a 'Fall Line' some 20 to 30 miles east of Bristol Bay.

LIFE ZONES AND ASSOCIATIONS

The Katmai region is the meeting ground of two life zones: the Hudsonian, which is characterized by white spruce forest (*Picea canadensis*), and the Arctic (in modified form), which is distinguished by *Calamagrostis* grassland.

This area contains the westernmost natural stands of spruce in southwestern Alaska. Along the coast, spruce extends in patches to Hallo Bay, where a stand of considerable extent forms the outpost. A few dead spruces, about six inches in diameter, still stand near the northern end of Takli Island in Amalik Bay. These trees were evidently smothered as a result of the Katmai eruption. On the west side of the Aleutian Range, the true spruce *forest* spreads south of Iliamna Lake to surround Iliuk Arm and the eastern end of Naknek and Brooks lakes. Considerable spruce also exists at the western end of Brooks Lake, where it follows the principal feeder stream, probably for a considerable distance. A narrow band of spruce is found also along the banks of the Naknek River to a point below the rapids, about twenty miles air line from the river's mouth on Bristol Bay. These isolated stands, however, are outposts of the forest which is moving westward and southward into the grassland.

Within the true spruce forest are found other habitats. Secondary groves of balsam poplar (*Populus balsamifera*) are numerous. In places the paper birch (*Betula kenaica*) is also common. Small ponds and lakes exist in potholes and on flats; their borders are frequently marshy or formed of quaking mats of *Vaccinium* and other small plants. The zone as a whole is characterized by the red squirrel, the marten, and the Spruce Grouse.

West and south of the spruce forest is the sub-climax alder-grassland, which has been well described by Griggs in 'The Vegetation of the Katmai District.' He has grouped with this sub-climax association several habitats: the strand or beach, characterized by the beach rye (*Elymus mollis*); the river-bank poplar forest (transitional between

Populus tacamahaca and *P. trichocarpa*); the salt marsh, with its practically pure stands of one grass, *Puccinellia paupercula alaskana;* the acid feld-mark (on knolls); and the heath, with its blueberries, dwarf birch, and *Empetrum*. Most of the region, however, is covered by a uniform, rank growth of practically pure grass, *Calamagrostis scabra,* with here and there clumps of alder (*Alnus sinuata*). On the deep sandy humus the grass grows five to seven feet tall, from sea level to elevations of 1200 to 1500 feet on the mountain sides. Set in this tundra are literally innumerable ponds, their margins bordered by sedge marshes, willow copses, or bogs, as the circumstances of drainage may determine.

Among the characteristic animals of the tundra region and coasts are the lemming, Arctic hare, Arctic fox, Willow Ptarmigan, Parasitic Jaeger, and several eiders.

The high mountains extend well into true Arctic Zone. They are covered with perpetual snow whose lower limits, even in early September, extend to about 5,000 feet on south-facing slopes. Between the snow-line and the grassland is a zone of rock and the sparse, small plants that maintain a precarious existence in such places. The snowfields feed many glaciers. Some of these ice-rivers are of considerable size and, as in the southern portion of Hallo Bay, almost reach sea level.

ITINERARY

I left Anchorage about noon of September 1, 1940, and flew via the Lake Clark pass, Lake Iliamna, and the Kvichak River to Naknek, arriving late that afternoon. After outfitting, we proceeded by boat up the Naknek River, September 3–4, turning into Naknek Lake and spending the night of the fourth at the mouth of Brooks River. The period of September 5 to 10 was spent along Brooks River, on a round trip of Brooks Lake, and along the south shore of Iliuk Arm. A pack trip was made from the head of the Arm to the lower portion of the Valley of Ten Thousand Smokes, in the Aleutian Range. With the necessary preliminary exploration, relaying of supplies, and bad weather, this required from September 11 to 18. Unfortunately, a terrific windstorm on the 15th tore our boat from its moorings and drove it across Iliuk Arm and fast on the beach near the outlet of the Savanoski River. Here we were stranded until the 27th. A few trips were made on foot in this region, although storms and the work of relaunching our boat prevented our doing much field work. The trip back to Naknek, by boat, was made on September 27–28.

Two plane flights were made over the Monument. The first, on

September 3, covered the lakes region, the Ukak River and the Valley of Ten Thousand Smokes. The second trip was from Naknek to Kodiak via Katmai Pass and Mount Katmai. Bird observations were, of course, limited.

At Kodiak a seine boat was chartered and the period of October 3–7 was spent in cruising along the coast of Katmai National Monument, from Katmai to Hallo bays. Brief excursions ashore were made in Katmai, Amalik, Kinak, Kaflia and Kukak bays, and in Geographic Harbor. This portion of the trip afforded a fine opportunity to observe the teeming waterfowl assemblage on this portion of the waters of Shelikof Strait.

PREVIOUS WORK

Published observations on the birds of the Katmai region are few. McKay and Johnson made collections at Ugashik between 1881 and 1886. In the autumn of 1902, Osgood made the trip across the Alaska Peninsula from Egegik to Kanatak and Cold Bay via Becharof Lake. In the course of the National Geographic Society's explorations of the Katmai region, a member of the 1919 party, James S. Hine, made observations and small collections of summer birds in Katmai and Kashvik bays, on the Katmai River and in the Valley of Ten Thousand Smokes. Apparently very little work has been done in addition to the above.

LIST OF SPECIES

YELLOW-BILLED LOON, *Gavia adamsi* (Gray).—Osgood records a large loon, "either this species or *G. immer*," that was killed and eaten by natives at Cold Bay, October 17, 1902. The species evidently is scarce. I did not see it.

PACIFIC LOON, *Gavia arctica pacifica* (Lawrence).—We found this species common on the Naknek River on September 3 and at Brooks Lake on September 9. Two birds were seen on the latter date at Brooks Falls, watching for food. On the western shore of Shelikof Strait, I recorded loons as "common" between Amalik and Katmai bays, October 4, and "abundant" on the following day in Amalik and Kinak bays and Geographic Harbor. Numbers of these birds were feeding on herring off Cape Nukshak on October 7. They were absent from the interior of the Alaska Peninsula, even where suitable habitats existed. I did not see a loon on Iliuk Arm during the two weeks of late September that I was again on and near that body of water. Loons had also disappeared from the Naknek River when we returned from the National Monument to Naknek village on September 28.

Hine states that "the common loon of the region" (presumably either this species or *G. stellata*) was seen frequently during summer in the Katmai Bay and River area.

RED-THROATED LOON, *Gavia stellata* (Pontoppidan).—As we traveled along the coast of Shelikof Strait from Amalik to Katmai bays, October 4, this species appeared to be rather numerous.

HOLBOELL'S GREBE, *Colymbus grisegena holboelli* (Reinhardt).—Two birds were seen on Brooks Lake on September 9, and four or five on the lower Naknek River on September 28. On Shelikof Strait, the species was abundant between Katmai and Kinak bays on October 4 and 5, and off Cape Nukshak on the 7th.

HORNED GREBE, *Colymbus auritus* Linnaeus.—This bird was scarce west of the Aleutian Range; only one individual was seen, on Brooks Lake on September 9. The species was abundant, however, east of the mountains. Great numbers were found in early October along the Shelikof Strait coast of the National Monument, and in most of the inlets from Katmai to Kinak bays.

Osgood assumed several small grebes, seen at the upper end of Becharof Lake on October 6–7, 1902, to be of this species.

SHORT-TAILED ALBATROSS, *Diomedea albatrus* Pallas.—Osgood states that "two specimens were taken by McKay on Bristol Bay near the mouth of the Ugashik River July 20, 1881."

SLENDER-BILLED SHEARWATER, *Puffinus tenuirostris* (Temminck).—"One specimen of this bird was taken near Ugashik by McKay September 15, 1881." (Osgood.)

FORKED-TAILED PETREL, *Oceanodroma furcata* (Gmelin).—Specimens were taken at Ugashik by McKay. (Osgood.)

LEACH'S PETREL, *Oceanodroma leucorhoa leucorhoa* (Vieillot).—One was taken by McKay at Ugashik on December 3, 1881. (Osgood.)

WHITE-CRESTED CORMORANT, *Phalacrocorax auritus cincinatus* (Brandt).—We saw cormorants, presumably all of this species, in some numbers in early September on the Naknek River and on Naknek Lake, as well as on the south shore of Iliuk Arm and at the mouth of the Savanoski River. A flock of 50 to 75 was noted flying east on September 9 over Brooks River, and the birds were abundant on Brooks Lake on the 9th. Two large flocks were seen near the mouth of the Savanoski River, September 22. Cormorants were relatively scarce on Naknek Lake and River by September 27 and 28. On the Pacific side of the area the species was much more numerous. Cormorants were "common to abundant" in the bays of the Katmai coast, October 4 to 7. On the latter date I saw numbers feeding on herring off Point Nukshak.

On September 27, while on a Fish and Wildlife Service patrol boat near the eastern end of Naknek Lake, a cormorant twice investigated our craft. The bird approached from the rear, flying up rapidly and then slowing down over, or to one side of, the stern until it was moving at our speed of perhaps ten or twelve miles per hour. It showed no signs of fear of the roaring boat, or of two of us who were standing on the afterdeck. I secured several photographs at a distance of fifteen to twenty feet.

PELAGIC CORMORANT, *Phalacrocorax pelagicus pelagicus* Pallas.—Small numbers were seen by Osgood in early October, 1902, on Becharof Lake. Hine states that "colonies of this cormorant nested on the shelves of the sea wall along Katmai and Kashvik bays during the 1919 season."

WHISTLING SWAN, *Cygnus columbianus* (Ord).—While we were flying south above the shore of Bristol Bay from the Kvichak River to Naknek, the noise of our plane's motor startled several flocks of swans into flight from the many tundra ponds. All the birds seen were strikingly white, mature specimens. All headed in a southerly direction. Although it was only the first day of September, these may have been 'bachelor' birds and already on their way southward.

Two swans were seen from the plane on Lake Grosvenor on September 3; two were seen resting on a bar of volcanic ash in the mouth of the Savanoski River on the 5th; and two were found September 11 on a little lake west of the Kukak River between Iliuk Arm and Mount Katolinat. Although showing alarm by bowing their heads and twisting uneasily in the water, these birds allowed me to approach to within a hundred yards before taking off. These three localities are less than fifteen miles apart and the swans seen may have been the same birds.

In descending the Naknek River on September 28 I counted a total of about fifty swans above New Savanoski village. One pair of adults was accompanied by three grayish cygnets, all of which were quite capable of flight.

BLACK BRANT, *Branta nigricans* (Lawrence).—Several flocks of geese, probably of this species, were seen between September 23 and 26 near the eastern end of Iliuk Arm. On the first date, a flock of about fifty circled several times, calling, around our boat which was aground near the mouth of the Savanoski River. The birds came quite low and seemed desirous of landing on a flooded area near us on the sand delta. They finally decided against dropping so close to possible danger and, without breaking their rough V-formation, went on north-

west in the direction of Mount LaGorce where I lost sight of them against the mountain. Two large flocks flew over the same area on the 25th and several more on the following day. All were flying in an easterly direction at a considerable height, probably headed for Cook Inlet.

COMMON MALLARD, *Anas platyrhynchos platyrhynchos* Linnaeus.—I found Mallards numerous on the Naknek River on September 4 and recorded "several" on Iliuk Arm on September 5, on Brooks Lake on the 9th, and again on the Naknek River on September 28. Later than this date, Mallards were numerous in suitable places in the Shelikof Strait area. A flock of thirty to forty was flushed from the sloughs near the abandoned Katmai village, October 4. Hundreds of Mallards, together with other species of waterfowl, were seen at the head of Geographic Harbor, where they were resting, feeding, and preening their feathers in the sunshine. Mallards were numerous in Amalik and Kinak bays.

In Hidden Harbor, at the head of Kinak Bay, I observed an interesting example of predator-prey relationship. As our seiner noisily chugged across the still water between the steep mountain walls, arousing lusty echoes, it disturbed a small bunch of Mallards that had been floating about a hundred feet from shore. As the ducks started to swim, rather slowly, toward the opening of the harbor, a brown object began to move unevenly in a parallel direction along the rocky shore. It proved to be a wolverine that was galloping hopefully after a duck supper. The Mallards appeared to feel quite secure from attack by land but they hurried away when our boat approached them. The wolverine, realizing that we had frightened his meal away, snarled at us, slowly loped up the talus slope of broken rock, and disappeared into a 'forest' of alders.

Osgood saw a few flocks of Mallards around Becharof Lake in October, 1902, and one was killed at the head of that lake as late as October 16. He also reported high-flying flocks of ducks, apparently Mallards, at Cold Bay on October 20.

BALDPATE, *Mareca americana* (Gmelin).—Osgood records several taken at Ugashik in September, 1881. Hine saw this duck occasionally in the Katmai Bay region in the summer of 1919, and secured specimens from small bodies of fresh water near the mouth of Katmai River.

AMERICAN PINTAIL, *Dafila acuta tzitzihoa* (Vieillot).—We saw a number on the Naknek River, September 4, and seven were counted on Brooks River a few days later. Frank Been identified one on Sep-

tember 19 near the mouth of the Savanoski River. For several days around the last date a flock of about 100 ducks, too far away for me to identify positively but which appeared to be Pintails, stayed in the mouth of the Savanoski. All day they stood in a dense group, duck almost touching duck, on a narrow, low, sandy island in the stream. At about 4 P. M. they moved off into the water and began feeding, still maintaining a fairly compact, much elongated formation. The river was rather swift and loaded with volcanic ash and sand. It was difficult to understand how the birds could find or distinguish food in that turbid water. By September 24, only one Pintail could be found in the area.

When we descended the Naknek River on September 28, we found that Pintails were present in some numbers, but the species was the least numerous of the several ducks noted.

I did not identify a single Pintail in the Shelikof Strait region during my travels there in October.

GREEN-WINGED TEAL, *Nettion carolinense* (Gmelin).—A flock of twelve was seen in flight near the outlet of the Savanoski River, September 24. This was the only positive identification of the species in the Katmai area.

SHOVELLER, *Spatula clypeata* (Linnaeus).—One Shoveller was seen on September 7 on Brooks River. I was rather close to the bird before it flew, and could even see the large bill distinctly.

GREATER SCAUP DUCK, *Nyroca marila* (Linnaeus).—Scaups, presumed to be of this species, were abundant on the Naknek River, being the second most numerous duck seen on the down-stream trip on September 28. The species was common on Brooks Lake on September 9, but was not seen in the more interior portions of the Monument. I saw several flocks between Katmai and Amalik bays on the western side of Shelikof Strait on October 4.

BARROW'S GOLDEN-EYE, *Glaucionetta islandica* (Gmelin).—I found this species numerous in the upper portion of the Naknek River, September 4. Several Golden-eyes were seen September 9 standing on some rocks below Brooks Falls. They were abundant in Amalik, Kaflia and Kukak bays, October 5 and 7. On the former date hundreds of them were resting on the mud flat at the head of Geographic Harbor.

Hine concluded that this was a rather common species in the Katmai Bay region in the summer of 1919. He observed it at times, and took a specimen on August 20 from "a small lake," presumably situated in the lower Katmai River valley.

BUFFLE-HEAD, *Charitonetta albeola* (Linnaeus).—Osgood reported seeing two specimens at Cold Bay, October 17, 1902, among some ducks killed on the bay by natives.

OLD-SQUAW, *Clangula hyemalis* (Linnaeus).—Several parties of this duck were seen by Osgood on the lower Egegik River on September 29, 1902.

WESTERN HARLEQUIN DUCK, *Histrionicus histrionicus pacificus* Brooks.—Harlequins were numerous in the upper Naknek River at the time of my up-stream trip on September 4, and abundant when I came down on the 28th. Scattered birds were recorded on Brooks River, on Iliuk Arm, and at the mouth of the Ukak River. Large numbers were seen on Brooks Lake. A huge flock of ducks, all of which appeared to be Harlequins in eclipse plumage, was resting in the mouth of the Savanoski River on the evening of September 5. In early October I found Harlequins common to abundant on the Shelikof Strait coast of Katmai National Monument from Katmai to Kukak bays. They were especially abundant at the head of Amalik Bay, and hundreds were resting on the mud flats at the upper end of Geographic Harbor.

Osgood, in 1902, saw small flocks along the Egegik River and in and about the mouths of the larger streams that empty into Becharof Lake. The species was also common on salt water at Kanatak and Cold Bay. Hine states that it was one of the commonest species of the Katmai Bay region in the summer of 1919.

STELLER'S EIDER, *Polysticta stelleri* (Pallas).—We saw a flock of six on October 4 in Amalik Bay and the same or another group on the following date. Several lone birds were observed at various places along the coast as far as Katmai Bay.

Osgood records specimens collected at Ugashik, on the Bristol Bay shore, by McKay and Johnson on July 17, November 12, and November 28.

PACIFIC EIDER, *Somateria v-nigra* Gray.—Good-sized flocks were seen by Osgood all along the Egegik River as well as on Becharof Lake. He took one specimen, a young male in transition plumage, near the head of Becharof Lake on October 7, 1902. He also saw large flocks at Kanatak and at Cold Bay.

KING EIDER, *Somateria spectabilis* (Linnaeus).—McKay took several specimens at Ugashik. Specimens were shot by Hine near the mouth of the Katmai River, June 25, 1919. He believed that many of the hundreds of ducks, seen fishing far out in Katmai Bay, were of this species.

WHITE-WINGED SCOTER, *Melanitta deglandi* (Bonaparte).—In early September we found this bird abundant on the Naknek River, but by the end of the month none were to be seen. On the Pacific side of the area, scoters were very numerous during the first half of October. They were "abundant to very abundant" along the entire mainland coast from Katmai Bay to Point Nukshak.

SURF SCOTER, *Melanitta perspicillata* (Linnaeus).—All of the Surf Scoters seen were on the Shelikof Strait coast of Katmai National Monument, October 4 to 7. They were "common" in Kinak Bay, but were abundant from Katmai to Amalik bays and in Kaflia and Kukak bays.

AMERICAN SCOTER, *Oidemia americana* Swainson.—This bird was numerous along the coast from Katmai to Amalik bays, but as we went northward the numbers decreased noticeably. Only a few were seen in Kaflia and Kukak bays.

Osgood found scoters common at Cold Bay, and specimens of this species were killed while he was there in October, 1902.

AMERICAN MERGANSER, *Mergus merganser americanus* Cassin.—My only observation of this species was on September 4, when several birds were seen on the Naknek River.

Osgood states that, with the exception of one adult male among a number of ducks killed by natives on Becharof Lake, none of the mergansers that he saw were referable to this species; all others were *M. serrator*.

RED-BREASTED MERGANSER, *Mergus serrator* Linnaeus.—I observed comparatively few mergansers on the Bristol Bay drainage, at least in early September. Several were seen on the Naknek River, September 3–4, and an adult accompanied by three flightless young splashed out of our way south of Reindeer Point on Naknek Lake. Three or four were seen on September 9, standing on the rocks in Brooks River below the Falls, perhaps watching for spent salmon. A number of flocks numbering three to fifteen birds were encountered on Brooks Lake. Late in the month this species was far more numerous on Naknek River, being the most abundant duck. In the Shelikof Strait area, this merganser was "common" only in Amalik Bay.

Osgood states that this species was exceedingly abundant on all the lakes and rivers he visited in 1902. This includes the Egegik River-Becharof Lake route across the Alaska Peninsula, not far west of Katmai National Monument. Hine, in 1919, found the Red-breasted Merganser common in the Katmai Bay area.

AMERICAN ROUGH-LEGGED HAWK, *Buteo lagopus s.johannis* (Gmelin).

—I made a number of observations of this species, all during September, on the west side of the Aleutian Range. Two birds were seen on the Naknek River at Big Creek, several miles below the rapids and in tundra type. The others were seen near Three Forks (junction of Windy and Knife creeks and Lethe River) at the margin of the sandflow. As the observations were made on successive days, September 14–17, they may represent some duplication of individuals. Five birds, however, were seen hunting at one time in a loose group.

NORTHERN BALD EAGLE, *Haliaeetus leucocephalus alascanus* Townsend.—Eagles may be more numerous in this region at present than they were forty years ago. In the course of slightly over a month's time in the Katmai area I noted a number of eagle records, most of which were certainly of different individuals.

My 'first' eagle on the Peninsula was seen on September 1 while I was flying by plane from Anchorage to Naknek. It was perched in the top of a sparsely-branched, stunted spruce near the north shore of Iliamna Lake. As we thundered directly overhead at an elevation of less than a thousand feet, the bird turned its head but did not look up.

Several eagles, as well as two nests, were seen on September 4 along the Naknek River. Near the rapids I saw an adult quietly perching on a lower branch of a cottonwood close to the trunk. It paid no heed to us as we went past in a gasoline-driven motor boat—apparently resting, for considerable foliage made the spot a poor observation point. Lone eagles were noted on September 5 on Brooks River (where an eagle tail, probably used as a brush or broom, also was seen in a trapper's unoccupied cabin), at the mouth of the Ukak River, and on the north slope of Mt. Katolinat (September 6).

At least six eagles were observed in a complete circuit of Brooks Lake, September 9. One of these, an immature bird, when approached was standing on a salmon head that had been washed up on the beach at the west end of the lake. An immature (Glaucous-winged?) gull stood by the eagle's side, in no evident fear of the powerful talons or heavy beak. The third member of this hungry trinity, a magpie, preserved a more careful distance. As we approached in our outboard-driven boat, the magpie flew away first. The eagle waited until we were about a hundred yards away and the gull remained until the distance had decreased to only a hundred feet.

The desolate base of the Aleutian Range seemed to be well populated by eagles. Several were seen around the middle of September on lower Windy Creek, along the southern edge of the great sandflow of the Valley of Ten Thousand Smokes. Other eagles were ob-

served in the upper Ukak Valley and around the outlet of the Savanoski River.

Along the Shelikof Strait coast of the National Monument in early October, several eagles were seen from Amalik to Katmai bays. One of these was perched on an eroded rock spire on the north side of the latter bay, while the next column supported a nest. Eagles were common also in Kinak Bay.

Osgood reports that only one eagle was seen during the month he spent on the Alaska Peninsula in the fall of 1902. This was observed on October 6 on Becharof Lake. Hine saw Bald Eagles at various times in the summer of 1919 between Katmai Bay and the Valley of Ten Thousand Smokes. He states that, "This was one of the few birds seen flying over the Valley of Ten Thousand Smokes. It was not flying high but apparently was not inclined to linger over and was soon out of sight in more productive territory."

MARSH HAWK, *Circus hudsonius* (Linnaeus).—I noted four records of this species. All were within the boundaries of Katmai National Monument, as follows: Brooks River outlet, September 7; over marsh west of the mouth of Ukak River, September 11; edge of sandflow at the lower edge of the Valley of Ten Thousand Smokes, about two miles below Three Forks, September 17; and over marshes surrounding Katmai village site, October 4. Two birds (the first and third recorded above) were males. When seen, all of the Marsh Hawks were engaged in cruising, undoubtedly searching for mice which were abundant.

OSPREY, *Pandion haliaëtus carolinensis* (Gmelin).—I noted only two Ospreys. One was at the rapids in the Naknek River, September 4; the other was seen flying over the outlet of Brooks Lake on the 7th. One of these—probably the latter bird—was seen several times at the head of Brooks River, where it watched for an opportunity to capture some of the salmon and rainbow trout that were then running in great numbers.

BLACK GYRFALCON, *Falco rusticolus obsoletus* Gmelin.—A specimen of undetermined sex was taken by C. L. McKay at Ugashik in 1881, and is now in the National Museum.

Several Gyrfalcons were seen by Osgood flying about a high volcanic cliff on Becharof Lake on October 4, 1902. They were presumed by him to be *F. r. uralensis*, but may have been *obsoletus* as both subspecies probably occur on the Alaska Peninsula during migration.

WESTERN PIGEON HAWK, *Falco columbarius bendirei* Swann.—I saw only two Pigeon Hawks, both on the west side of the Aleutian Range.

The first was on the lower Ukak River, September 9, while the second was on Windy Creek above Three Forks, September 16. When first seen, the latter bird was hunting over the grassy slopes south of Windy Creek, probably searching for mice. As I watched, it swung north across the creek and began cruising over the sandflow. Seemingly, it was continuing to look for rodents on the flat, sterile flow where possibly no mouse has ever ventured.

In the region of Katmai Bay, Hine saw this species commonly during the summer of 1919. About August 1 he saw two adults and four young of the season in flight on the south side of the bay. Hine cites two instances of relationships between the Pigeon Hawk and magpie. One of these occurred on August 15 on Cape Kubugakli (south side of Kashvik Bay). The hawk, which had been in an encounter with magpies, had received such severe treatment that it was unable to fly away and allowed Hine to walk up to it. The single magpie, which was engaging the hawk when Hine first approached, flew gracefully away to join six others of its kind. These, he considered, had probably been helping in the attack on their enemy.

ALASKA SPRUCE GROUSE, *Canachites canadensis osgoodi* Bishop.—We found this species to be quite abundant in the spruce forest north of Mount Katolinat, in the angle between Ukak River and Iliuk Arm. The largest number of birds seen together was five, but the thick growth may well have concealed others. In similar forest north of the Savanoski River and Iliuk Arm, the only trace of Spruce Grouse that I found was a feather. A poacher had occupied a cabin in this region during the previous winter, and the grouse may have suffered accordingly.

WILLOW PTARMIGAN, *Lagopus lagopus albus* (Gmelin).—This bird was recovering from a period of extreme scarcity on the Alaska Peninsula. I saw only three flocks, all late in September and near the extreme western edge of the National Monument between Naknek and Brooks lakes. On September 27, while on the patrol boat on the southern part of the former lake and about ten miles west of Brooks River, I noticed a flock of twenty to twenty-five ptarmigans flying up the slope. Even when they settled on the ground a good quarter-mile away I could still make them out distinctly with binoculars—their white plumage conspicuous against the yellowish-brown tundra. The following day, from a plane, I saw two flocks, of fifteen to twenty birds each, south of the above locality and within a couple of miles of the north shore of Brooks Lake. Even though the sky was heavily clouded and the light very dull, these birds stood out apparently pure white against the rocks and pale brown grass.

NELSON'S PTARMIGAN, *Lagopus rupestris nelsoni* Stejneger.—Rock Ptarmigans were seen by Osgood in the mountains on the Kanatak portage and about Cold Bay, October 12 to 26, 1902. At that time both species of ptarmigans (*albus* and *nelsoni*) were to be found in the same flock. They also were rapidly losing the dark summer plumage, so that as they rested on the browned vegetation, their white bodies were very conspicuous.

The only individual seen by Hine in the Katmai Bay region was taken "on the mountain side just back from Kashvik Bay, August 23," 1919. He inferred that the species was not common in that area—a conclusion that still appears to be true, at least as far north as I was able to explore (Hallo Bay), for I saw no ptarmigans along the entire coast.

PACIFIC GOLDEN PLOVER, *Pluvialis dominica fulva* (Gmelin).—Several were seen by Osgood at Egegik, and others occasionally along the Egegik River as far as the mouth of Becharof Lake. Hine observed small flocks on the mud flats and sandy stretches of Kashvik Bay. He took one specimen on August 24, 1919.

BLACK TURNSTONE, *Arenaria melanocephala* (Vigors).—The main migration of turnstones had passed on to the south before I reached the Shelikof Strait region. I saw one lone bird, October 5, in Amalik Bay.

Specimens have been taken at Ugashik in June and July (by McKay and Johnson). According to Hine's observations in 1919, the species "first appeared along the shores of Kashvik Bay about the first of August, and increased in numbers later. August 25, flocks of a hundred or more were seen and at this time it was one of the most abundant shore birds in the locality." He took specimens, showing some variation in color, August 7 to 21.

WILSON'S SNIPE, *Capella delicata* (Ord).—We saw this species in a number of places within the Katmai National Monument: outlet of Brooks Lake, September 5; west of outlet of Ukak River, September 11 (Frank Been, who was crossing the marsh at some distance from my course, saw three birds, while I flushed one); Old Savanoski village, September 13; upper Ukak River, September 14 (two birds); and head of Geographic Harbor, October 5.

HUDSONIAN CURLEW, *Phaeopus hudsonicus* (Latham).—A flock of seven curlews flew in an easterly direction over the U. S. fisheries station on the Naknek River about five miles above Naknek village, September 2. They were calling and apparently disturbed over the presence of a small unidentified hawk that was flying in the same

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general direction at a lower elevation. The hawk, however, paid no heed to the curlews.

WANDERING TATTLER, *Heteroscelus incanus* (Gmelin).—A pair of these birds was observed by Hine along a rocky coast on Katmai Bay, August 3, 1919. He took one specimen, and secured a second on August 25. The latter was a bird of the season with white under parts.

GREATER YELLOW-LEGS, *Totanus melanoleucus* (Gmelin).—This species nests commonly along the shore of Katmai Bay, according to Hine, who saw several pairs.

LESSER YELLOW-LEGS, *Totanus flavipes* (Gmelin).—I saw considerable numbers of these birds, September 28, on mud flats exposed by falling tide on the Naknek River below the rapids.

ALEUTIAN SANDPIPER, *Arquatella ptilocnemis couesi* Ridgway.—One flock of about twenty birds was found by Osgood at Cold Bay, October 16, 1902, and specimens were secured. Hine states that only two or three of these sandpipers were seen by him at any one time along the shore in the region of Katmai Bay. He took three specimens, August 20 to 23, 1919.

LEAST SANDPIPER, *Pisobia minutilla* (Vieillot).—A few were observed by Hine on the beach near the mouth of Katmai River and one specimen was taken on July 23, 1919.

RED-BACKED SANDPIPER, *Pelidna alpina sakhalina* (Vieillot).—Several small flocks were seen by Osgood flying up and down the Egegik River, September 29, 1902. He notes that McKay took several specimens in May and July, 1881, at Ugashik. Hine records the taking of one specimen (misnamed Red-*breasted* Sandpiper) August 23, 1919, on a sandy beach near the mouth of Katmai River. He did not find it in numbers at any time.

WESTERN SANDPIPER, *Ereunetes maurii* Cabanis.—On sandy beaches in the Katmai-Kashvik Bay area, according to Hine, large flocks were common for several days. He took specimens on July 23 and August 2, and observed the species frequently for a longer period.

MARBLED GODWIT, *Limosa fedoa* (Linnaeus).—According to Osgood, two immature specimens of the Marbled Godwit were taken by McKay at Ugashik, July 16–18, 1881.

RED PHALAROPE, *Phalaropus fulicarius* (Linnaeus).—A single phalarope, supposed to be of this species, was seen by Osgood on Becharof Lake, October 6, 1902.

NORTHERN PHALAROPE, *Lobipes lobatus* (Linnaeus).—In the Katmai National Monument I noted two occurrences of Northern Phalaropes —one on Brooks Lake on September 9 and one at Cape Nukshak on Shelikof Strait, October 7.

Osgood's party did not see this species, but he noted that two specimens were taken by McKay at Ugashik, July 15 and August 10, 1882. Hine saw the birds in small groups swimming in pools adjacent to the mouth of Katmai River, July 25, 1919, and took specimens. He saw flocks on different occasions over a period of three or four weeks.

PARASITIC JAEGER, *Stercorarius parasiticus* (Linnaeus).—One specimen, in the dark phase, was taken by McKay on the Ugashik River, July 28, 1881. (Osgood.)

LONG-TAILED JAEGER, *Stercorarius longicaudus* Vieillot.—Specimens were taken by McKay at Ugashik, July–August, 1881. (Osgood.)

GLAUCOUS-WINGED GULL, *Larus glaucescens* Naumann.—Nearly everywhere that I went, this species was common to abundant. Along the Naknek River were many gulls, perched on rocks in the water or feeding on dead salmon that had been washed ashore. The eyes of every dead salmon seen in and near the rapids had already been devoured. These prized delicacies are the first parts of the fish on which the gulls begin to feed. A number of immature gulls were seen on September 5 on the small rocky islands in the coves along the south shore of Iliuk Arm. Although slow to fly, those that were approached closely seemed quite capable of taking to the air. These islands are probably important as nesting places for gulls and cormorants, although we were unable to land to look for evidences of past use.

Glaucous-winged Gulls were common on Brooks River and Lake. At the southwestern corner of the lake, on a little sandy bar, I found the fresh remains of a juvenile gull, probably of this species. Tracks in the sand which had been smoothed by the previous day's rain indicated that an adult gull had fed upon the carcass. A large wolf had walked along the beach to within ten or fifteen feet of the spot, then turned away.

This gull was usually present in some numbers at the head of Iliuk Arm. As we approached on September 27, veritable clouds of the birds rose from the piles of salmon refuse accumulated near the Aleuts' drying station at the outlet of Brooks River. Gulls were also abundant on Naknek River during our return passage down-stream.

In the Shelikof Strait region, Glacous-winged Gulls were rarely out of view. They were common to abundant in all bays from Katmai Bay to Cape Nukshak. Concentration points were Kinak Bay and the head of Geographic Harbor.

During Hine's stay on the shore of Katmai Bay in the summer of 1919, this gull was also common. It nested all along the sea where suitable rock walls were present and fed its young mainly on the common brittle-shelled clam (*Siliqua patula* Dixon).

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Osgood saw many Glaucous-winged Gulls at Egegik and on Becharof Lake, where they were said to breed in some numbers. He observed them about the lake only in scattering numbers, except at the mouths of the small salmon streams where they fairly swarmed. The species was also seen at Kanatak and Cold Bay.

HERRING GULL, (?) *Larus argentatus smithsonianus* Coues.—A number of large gulls that I studied closely with 8-power binoculars, at distances of about 100 feet, carried every characteristic of this species. Wing-tips especially were densely black instead of dark gray as in the Glaucous-winged Gull. These birds were common on Naknek River September 3 and 4. A few were seen on Naknek Lake at Brooks River on September 5 and several on Brooks Lake on the 9th. The species was not identified thereafter.

SHORT-BILLED GULL, *Larus canus brachyrhynchus* Richardson.—A few small gulls, supposed to be of this species, were seen by Osgood at Egegik and thence across the Alaska Peninsula to Kanatak and Cold Bay. Hine noted numbers of Short-bills among the thousands of gulls at Kashvik Bay during the latter half of August, 1919. He took a specimen in immature plumage on August 23.

BONAPARTE'S GULL, *Larus philadelphia* (Ord).—I found Bonaparte's Gull common on the Naknek River on September 3 and 4, but saw only one bird thereafter, at the outlet of the Savanoski River on September 20.

Specimens were taken at Ugashik by McKay and Johnson. Hine states that about the first of August, 1919, large flocks appeared on the rich feeding grounds in Kashvik Bay. He secured several specimens on August 2.

PACIFIC KITTIWAKE, *Rissa tridactyla pollicaris* Ridgway.—I found Kittiwakes common on the Naknek River, September 3 and 4 and, later, on Brooks Lake, Brooks River, and Iliuk Arm. Most of those seen on Brooks Lake (about ten) were in a single group in a little bay about midway of the southern shore. The species was fairly common at the outlet of the Savanoski River and, while our boat was beached there from September 15 to 27, afforded us considerable amusement.

The bird's small bill and short, thick neck gave it a placid, hen-like appearance, but its disposition was that of the typical gull. The first Kittiwake on a patch of sand resented the arrival of newcomers and drove them off with ruffled threats and raucous shouts. During most of one afternoon, while we were working to refloat our boat, one Kittiwake pattered curiously about us. Sometimes it came as

close as fifty feet if no obvious attention was paid. If one of us turned toward it, however, the bird hurried away with a ludicrous, waddling gait. This Kittiwake appeared to be very inquisitive about us and our actions; it may, however, have been hoping that our activities would stir something edible out of the sand.

On the Shelikof Strait coast of the Monument, Kittiwakes were abundant from Katmai to Hallo bays, October 4 to 7. Many were seen on the mud flat at the head of Geographic Harbor, and great numbers were feeding on the herring that were jumping off Cape Nukshak.

Two specimens were taken at Ugashik by McKay on September 11, 1881. Osgood failed to record the Kittiwake on his trip across the Alaska Peninsula in the fall of 1902. Hine did not see the species at Katmai Bay until about the tenth of August when it appeared in large flocks of hundreds of birds. He states that at times it composed a large percentage of the gulls present in Kashvik Bay.

ARCTIC TERN, *Sterna paradisaea* Brünnich.—I saw a number of Arctic Terns fishing in the Naknek River about five miles above Naknek village, September 2. Several were noted on Naknek Lake on September 4, and one was seen on Brooks River on the 6th.

CALIFORNIA MURRE, *Uria aalge californica* (Bryant).—I found Murres common along the coast of Shelikof Strait, from Amalik to Katmai bays (October 4) and in Kukak and Hallo bays (October 7).

MARBLED MURRELET, *Brachyramphus marmoratus* (Gmelin).—I saw these birds commonly along the Shelikof Strait coast, from Katmai Bay northward. They seemed to be most abundant in Kukak and Hallo bays.

Several murrelets (apparently this species) were seen by Osgood on Kanatak Bay, October 13, 1902.

CRESTED AUKLET, *Aethia cristatella* (Pallas).—There is one specimen from Ugashik, taken by McKay.

RHINOCEROS AUKLET, *Cerorhinca monocerata* (Pallas).—I observed a number of these auklets on October 4 between Amalik and Katmai bays.

HORNED PUFFIN, *Fratercula corniculata* (Naumann).—We found this species to be common along the rocky coast from Amalik to Katmai bays, October 4.

TUFTED PUFFIN, *Lunda cirrhata* (Pallas).—On the evening of October 3, as we sailed into Amalik Bay to our anchorage in the gathering dusk, great numbers of Tufted Puffins and Harlequins and other ducks took wing to let us pass. They made a spattering and splash-

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ing that we could hear above the sound of our boat engine. As the dusk deepened, some of the birds left luminous wakes in the phosphorescent waters. A few of the waterfowl were extraordinarily tame, or bewildered, and let us pass within a hundred feet.

SNOWY OWL, *Nyctea nyctea* (Linnaeus).—Osgood states that this species is said to be a regular winter visitant at Egegik and Becharof Lake.

AMERICAN HAWK OWL, *Surnia ulula caparoch* (Müller).—Been and I were given a fine view of two Hawk Owls at close range on September 11. The scene of the encounter was in a grove of mature cottonwoods at the northern base of Mount Katolinat, about two miles above the outlet of the Kukak River. The owls flew to meet us and perched in the half-dead tree tops within a hundred feet. They showed a lively curiosity with no evidence of fear. A light rain that was falling caused them no concern but, after four or five minutes of staring and shifting about, the birds flew off into the woods.

Medium-sized owls, probably of this species, were seen on two occasions at night. One bird, while hunting over the marshes at the outlet of Brooks River on the evening of September 6, flew within ten feet of me. I was able to see it quite distinctly in the light from our boat. The other bird made several circles around me late in the evening of September 17 as I lay in my sleeping bag on the sand dunes west of the Ukak River, on the south shore of Iliuk Arm. It called once or twice in a soft, inquiring tone.

SHORT-EARED OWL, *Asio flammeus flammeus* (Pontoppidan).—This owl was seen by Osgood in considerable numbers. It was attracted by lights and came about several of his camps on Becharof Lake. He saw a number at dusk flying over houses in Egegik. Numerous specimens were taken by McKay and Johnson at Ugashik.

WESTERN BELTED KINGFISHER, *Megaceryle alcyon caurina* (Grinnell).—We found kingfishers to be fairly common in the lake country of the Katmai region, as well as in the bays off Shelikof Strait. Birds were recorded on Naknek River at Big Creek (September 4); Brooks River (September 5 and 9); and on Naknek River (September 28). On the coast, a kingfisher rattled at us as we sailed into the narrow passage between Amalik Bay and Geographic Harbor on October 5, and another bird was seen in Kinak Bay on the same date.

NELSON'S DOWNY WOODPECKER, *Dryobates pubescens nelsoni* Oberholser.—I saw only one bird, a male, in the spruce-cottonwood forest between Iliuk Arm and Mount Katolinat, September 19.

ALASKA THREE-TOED WOODPECKER, *Picoïdes tridactylus fasciatus*

Baird.—One bird, a male, was seen at close range September 12 at the outlet of the Ukak River. It was looking for food in a fringe of dead spruce that had been smothered by ash washed down from the Valley of Ten Thousand Smokes.

ALASKA JAY, *Perisoreus canadensis fumifrons* Ridgway.—Jays were common in the spruce-aspen 'forest,' and wherever even scattered trees occurred. A flock of six or eight hung about the camp of Fish and Wildlife Service employees engaged in counting salmon at the head of Brooks River. Trappers' cabins that had been occupied during the previous winter seemed to hold some promise of future food supplies for the jays, for they clung tenaciously to the two such cabins that we visited. Other localities where the species was seen were: west end of Brooks Lake (several, September 9); lower Ukak River (common, September 10, 11, 18); Old Savanoski village (several, September 13); middle portion of Ukak River (September 14); north slope of Mount Katolinat (common, September 20); and north of outlet of Savanoski River (common, September 23).

AMERICAN MAGPIE, *Pica pica hudsonia* (Sabine).—In the regions that I visited, magpies occurred nearly everywhere sparingly to commonly. They lived in the forest and on the open tundra. Records noted west of the Aleutian Range were as follows: Brooks River (several around Scott's camp near head of the river, September 5 and 7); Brooks Lake (noted in a number of places around the shore, and about two miles above the head of the lake on the principal feeder stream, September 9); lower Ukak River (common, September 9, 10, 14); Old Savanoski village (two, September 13); lower Windy Creek (several seen on vegetated slopes near edge of sandflow, September 15); mouth of Ukak River (several, September 18); north slope of Mount Katolinat (common, September 20); north of outlet of Savanoski River (common, September 23). On the Shelikof Strait coast, I saw three magpies at Katmai village, October 4. Other birds were noted on Takli Island and in Hidden Harbor, October 5, and in Kaflia Bay and at the ruined clam-cannery buildings in Kukak Bay, October 7.

Osgood concluded that this species occurred "sparingly throughout the entire region" in 1902. He took a specimen on Becharof Lake on October 6, and saw a small flock at Kanatak on October 12. Hine found the magpie rather plentiful (flocks of five to eight birds) in wooded areas of the lower Katmai River valley and Kashvik Bay.

NORTHERN RAVEN, *Corvus corax principalis* Ridgway.—I saw ravens in a number of localities on both sides of the Aleutian Range. Single

birds were noted at Brooks River (September 5), Savanoski River (September 6), and at Old Savanoski village (September 13). On the late afternoon of September 25 we saw three or four ravens flying in a northerly direction over the outlet of the Savanoski River. One bird was 'performing'—reversing onto his back, then turning upright again—and croaking at intervals as if to call attention to these aërial gymnastics. Ravens were seen in the upper Ukak River valley on September 14. I recorded them as "common" at the outlet of that river, September 18. Several birds were seen on the lower Naknek River on the 28th.

In the lower Katmai River valley, on October 4, I saw a couple of ravens. One of these croaked for some time while floating very high in the air over the bay. Single birds were also noted in Geographic Harbor and in Kinak Bay, October 5, and at Kukak Bay, October 7.

Large flocks of ravens were seen by Osgood at Kanatak, doubtless attracted by the carcass of a right whale that had drifted ashore near there. He saw a few at Cold Bay, and found them to be common on the north side of the peninsula at Egegik.

YUKON CHICKADEE, *Penthestes atricapillus turneri* (Ridgway).—Although I did not run across any chickadees during my brief stay on the coast of Shelikof Strait, I found them quite frequently and in some abundance west of the Aleutian Range. This species was noted on Naknek River at Big Creek, September 4; in the spruce-cottonwood forest east of Brooks Lake, September 5; and along Brooks River, September 7. I found a few in the spruce woods along the principal feeder stream flowing into the western end of Brooks Lake, September 9. Chickadees were recorded as abundant along the lower Ukak River, September 10, 11, and 20, and were seen in scattered cottonwoods along the upper Ukak on the 14th. In the dismal tundra grassland south of Windy Creek, chickadees sang quite frequently around our camp.

After Been and I had found it impossible, because of flooded streams, to reach the main part of the Valley of Ten Thousand Smokes, we returned to the beach at the head of Iliuk Arm. While waiting on the dunes for our boatman, September 18, we were entertained by three chickadees. The birds were hunting for insects on the scrub willows, and at times came within ten feet of us. A few days later, I found chickadees common in the forest north of the outlet of the Savanoski River.

Osgood found chickadees sparingly all along his route in 1902, and collected specimens at Cold Bay. At the National Geographic So-

ciety base camp on Katmai Bay in 1919, flocks of chickadees appeared in wooded areas just before the middle of July. Hine took specimens here July 12.

DIPPER, *Cinclus mexicanus unicolor* Bonaparte.—I saw my one Dipper in the Katmai region at Brooks Falls on September 5. The bird, an adult, was feeding on the very brink of the waterfall about thirty feet from the southern bank. It took no apparent notice of our four-man party as we stood and moved about on shore. For ten minutes after our arrival the bird continued to probe for insects, with the water slipping over its back in a silvery sheet as it quickly dipped under. After taking some still pictures, I set up a movie camera. As I was completing focusing, however, the Dipper flew to the north end of the falls, 200 feet away, where it commenced another search for food on a jutting mossy ledge.

One specimen was taken October 18, 1902, by Osgood on a small mountain stream at Cold Bay.

EASTERN ROBIN, *Turdus migratorius migratorius* Linnaeus.—I found that robins were numerous in the willow-cottonwood-spruce thickets on Naknek River at Big Creek on the early morning of September 4. They were probably migrating. I did not see any after leaving the river on that date and passing into the lake region in the National Monument.

ALASKA HERMIT THRUSH, *Hylocichla guttata guttata* (Pallas).—Hine considers that this species was not common in the Katmai River region. He took a specimen on July 25, 1919, at the extreme eastern end of Katmai Bay "in a very wild locality." Nesting was probable although a nest was not actually observed.

AMERICAN PIPIT, *Anthus spinoletta rubescens* (Tunstall).—Although not observed until about the first of August, 1919, it was common for the remainder of that season on the beaches along Katmai and Kashvik Bays. Hine took specimens on August 10.

NORTHWESTERN SHRIKE, *Lanius borealis invictus* Grinnell.—I found shrikes to be fairly common on the west side of the Aleutian Range. At the outlet of Brooks River one was seen September 5, and a pair on the 7th and 8th. Shrikes were numerous along the lower Ukak River on September 10, 11, and 14. I saw one bird on lower Windy Creek on September 15, and several in the open spruce-cottonwoods, on the lower northern slope of Mount Katolinat on September 19.

Two specimens were taken by McKay at Ugashik September 20, 1881.

ALASKA YELLOW WARBLER, *Dendroica aestiva rubiginosa* (Pallas).—Hine saw this species often in the wooded areas near the Katmai Bay

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camp of the 1919 expedition of the National Geographic Society. There was every evidence that it was nesting although the nest was never found. A specimen was taken on July 12.

NORTHERN PILEOLATED WARBLER, *Wilsonia pusilla pileolata* (Pallas).—This was the most plentiful warbler of the lower Katmai River valley, according to Hine. He secured specimens on July 12 and 23.

HOARY REDPOLL, *Acanthis hornemanni exilipes* (Coues).—I saw one group of Hoary Redpolls on the dunes at Katmai Bay, near the outlet of the river, October 4.

Osgood found this species commonly about Becharof Lake and at Kanatak and Cold Bay, October 1–26, 1902. He secured several specimens on Becharof Lake and at Cold Bay.

COMMON REDPOLL, *Acanthis linaria linaria* (Linnaeus).—According to Hine, flocks of Common Redpolls began to appear around his camp on Katmai Bay about the middle of July. The birds were soon found everywhere in the Katmai River valley and in the surrounding mountains. He once saw a large flock flying about over the Valley of Ten Thousand Smokes. He took specimens on July 23, 1919.

WESTERN SAVANNAH SPARROW, *Passerculus sandwichensis alaudinus* Bonaparte.—Common in the vicinity of Katmai Bay and a characteristic bird of the region, according to Hine. He took specimens on June 22 and July 8, 1919.

WESTERN TREE SPARROW, *Spizella arborea ochracea* Brewster.—I saw Tree Sparrows in the scrubby willow-cottonwood clumps on the north bank of Naknek River at Big Creek, September 4; and in the spruce-cottonwood forest north of the outlet of the Savanoski River, September 6.

GOLDEN-CROWNED SPARROW, *Zonotrichia coronata* (Pallas).—I found one flock of Golden-crowned Sparrows in the lower Ukak River valley, September 11.

Hine found this species quite common "over much of the Alaskan territory visited" (presumably Kashvik Bay, Katmai River valley, and the surrounding mountains, as well as the Ukak River system). He secured one specimen on August 15, 1919.

SHUMAGIN FOX SPARROW, *Passerella iliaca unalaschcensis* (Gmelin).—In the Katmai River valley, Hine saw Fox Sparrows in woodland margins. One specimen was taken on July 9, 1919.

ALEUTIAN SONG SPARROW (?), *Melospiza melodia sanaka* McGregor.—I identified Song Sparrows at two places in the Katmai region. One bird, probably *sanaka*, was in a willow thicket on the bank of the Naknek River at Big Creek, September 4. In the other instance, two

Song Sparrows were flitting about among the buildings and ruins of the burned clam cannery in Kukak Bay, October 7. The latter birds may have been *insignis*.

Hine states that "a few specimens [were] observed along the rocky coast of Katmai Bay . . . Specimen taken July 25" [1919]. If this specimen was correctly identified, it presumably establishes the race to which the Song Sparrow of this coast should be assigned. It would be assumed, however, that the form so common on Kodiak Island (*M. m. insignis*) would occur also on the adjacent coast of the Alaska Peninsula.

ALASKA LONGSPUR, *Calcarius lapponicus alascensis* Ridgway.—This was practically the only small land bird found by Osgood in the tundra about Bristol Bay during middle and late September. He saw longspurs daily at Egegik, along the Egegik River, and at various points along Becharof Lake. A few were seen at Kanatak and several at Cold Bay as late as October 25, 1902. In tundra in the Katmai River valley, Hine found nesting longspurs plentiful in summer. He secured specimens in breeding plumage on July 12, and "other specimens" on August 15.

EASTERN SNOW BUNTING, *Plectrophenax nivalis nivalis* (Linnaeus).—Osgood saw a small flock on Becharof Lake on October 6, and a few more in the mountains between the lake and Kanatak. He adds that the species "also breeds at Cold Bay, where Maddren found it nesting in high rocky cliffs in the summer of 1903."

Hine and other members of the 1919 National Geographic Society expedition to Katmai often found "snowflakes" on the tops of peaks, and on several occasions found them in Katmai Canyon. A pair of these birds was seen and heard singing in upper Mageik Creek. At the time, these localities were still devastated as a result of the eruption of Mount Katmai in 1912, and even tufts of green grass could rarely push through the thick layer of ash.

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PRELIMINARY NOTES ON THE DEVELOPMENT OF NESTLING PILEATED WOODPECKERS

BY J. SOUTHGATE Y. HOYT

Plates 14, 15

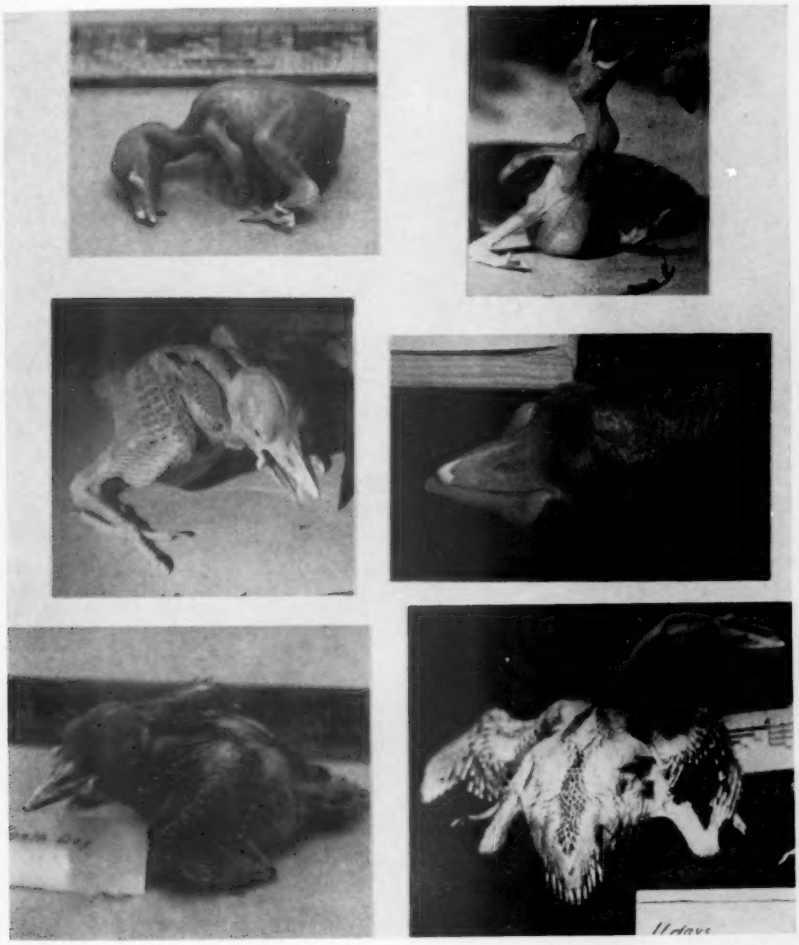
THE work here reported was done on the Northern Pileated Woodpecker (*Ceophloeus pileatus abieticola*) nesting in the vicinity of Ithaca, New York, in the spring of 1939. The nest was under observation throughout the period of incubation and the date of hatching was eagerly awaited. The notes detailed in this paper commence with the first day after hatching, which is designated as the first day. The young birds were removed from the nest each day, studied, weighed, photographed, and carefully replaced as soon as possible. The same nestling was photographed each day, thus making a comparable series of pictures.

On several occasions the parent birds appeared while this work was being done, but they seemed to show remarkable tolerance for human intrusion, for on but one occasion did they become unduly excited. In this case, the male entered the nest a few minutes after I had replaced the young and withdrawn to a position about fifteen feet from the nest stump.

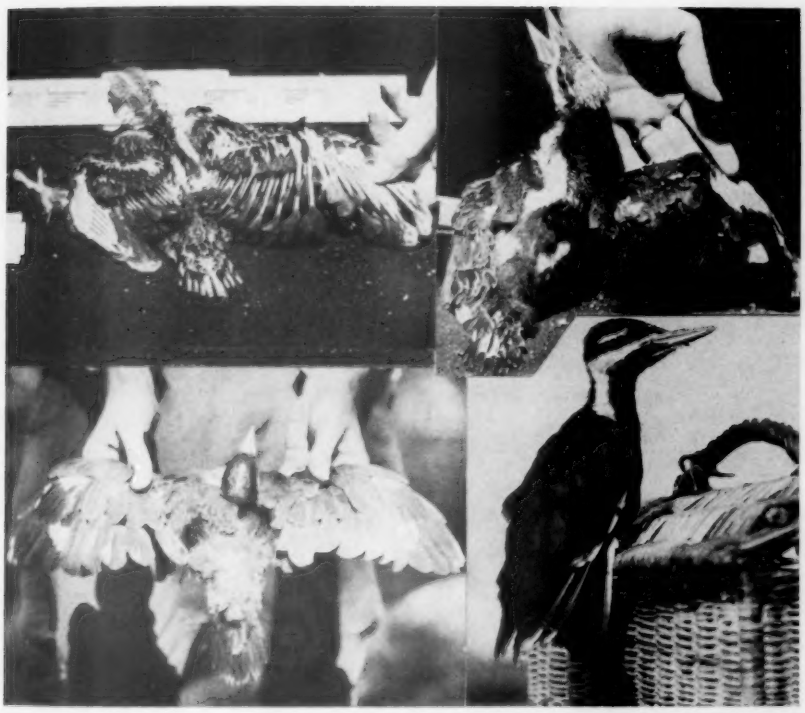
FIRST DAY

The woodpeckers are altricial and the young are hatched completely naked and helpless. The young of most birds are rather ugly and extremely awkward, but I think the young Pileated Woodpecker excels in these qualities. The newly hatched bird is a small, squirming, ugly, awkward, and completely helpless mass of life. The abdomen is the largest part while the neck is very much like a small pencil in size, stretching well up in the air when the bird is disturbed. The skin over the entire body is flesh colored and so thin that one can readily see the internal organs through it. The skin extending between the femur and the tibio-tarsus is very loose and allows free movement of the femur in the acetabulum. The tarso-metatarsus is extremely short, being just about an inch long. The feet are very small and do little towards supporting the clumsy body; the toes are rather stubby and have very small claws. Balance is maintained with the feet with the assistance of the large abdomen which sags to the ground between the legs.

The neck is long and snake-like and is usually held curved under the body (Plate 14, upper left). The head is small and the eyes are extremely large in comparison but are tightly sealed. The lower



YOUNG PILEATED WOODPECKER. (Upper left), ONE DAY OLD. (Upper right), FOUR DAYS. (Middle left), EIGHT DAYS. (Middle right), HEAD; AT FOUR DAYS. (Lower left), TEN DAYS. (Lower right), ELEVEN DAYS.



YOUNG PILEATED WOODPECKER. (Upper left), FIFTEEN DAYS OLD. (Upper right), NINETEEN DAYS. (Lower left), TWENTY-ONE DAYS. (Lower right), TWENTY-SIX DAYS.

mandible is very large and broad at the base, with the corners of the mouth abnormally large. This large portion projects from the sides of the mouth as a soft, round, and greatly swollen area. The upper mandible is small and rests within the lower one much in the fashion of a smaller boat stacked within a larger one. This upper mandible is much shorter than the lower one. Each mandible has a white tip of a quite different texture from the rest of the bill. This tip remained white for some time, becoming smaller and finally sloughing off shortly after the bird left the nest. The picture of the one-day-old young shows this structure very well and a comparison of the different stages of growth illustrates the slow change. Whether this tip is a form of the egg tooth in this bird I am not sure, but it may well be used for the same purpose. The egg tooth may possibly appear at an earlier stage and be lost soon after hatching, and this tip may be an entirely different structure. This white tip is present on both mandibles, being larger on the upper than on the lower one. As in the adult bird, the upper mandible is deeper than the lower while the latter is flat and broad.

The wings are small and useless even as a means of balance. On the posterior border there are small pits through which the primaries will later develop, but there is just a very small hair-like projection in each pit at the present stage. The rectrices are in the same condition as the primaries but are slightly larger. The heel is thick and covered with a soft and padded skin on which the body frequently rests. None of the feather tracts shows any signs of development. The abdomen is very round and on the under side and a little anterior to the anus is the yolk stalk. This stalk is rather long and twisted and projects from the abdomen much in the fashion of the umbilicus of a mammal. The ear does not show on the head at this stage. The oil gland is large and stands out well at the base of the tail.

The largest of the three birds is just barely able to support its body enough to raise its head above the body and open its mouth. When disturbed the birds make a very faint, squeaky, hissing noise that cannot be heard very far away.

The average weight of the three birds is 28.9 grams.

SECOND DAY

Of course there is very little change the first few days after the birds have hatched. The wings show very small and almost minute black spots under the skin where the flight feathers will soon appear. The rectrices are in about the same condition, showing no signs of devel-

opment. The auricular orifice is slightly more developed, and there is a small indentation in this region of the head. The only sign of development of the eye is a small thickened line across it. This line will separate the two eyelids within a few days. The average weight of the three birds is 41.2 grams, a gain of 12.3 grams within the last twenty-four hours.

The birds show more activity and exert much more strength in their actions while I have them out of the nest. Their heads are still kept bent under their bodies, and are raised only when I make any noise or commotion near their position on the ground.

THIRD DAY

The eyes show a thickened streak, much like a very tightly shut eye, having more the appearance of an eyelid. The ear is much more prominent and the opening is considerably larger than before.

Many of the feather tracts show as well-defined lines of darkened spots running across the smooth, delicate skin. These tracts are in the form of raised ribs that are filled with the developing feathers which give them the dark appearance. No feathers on the head have started to develop yet, but on most of the rest of the body the tracts are well started. All of the birds have considerably more strength and are very much more active. Their voices are stronger and from beneath the nest one can hear the buzzing, hissing sound.

The average weight of the three birds is 51.0 grams, a gain of 9.8 grams.

FOURTH DAY

All three of the young birds have developed well in the past twenty-four hours. The primaries and secondaries have just started to break through the skin. The rectrices are showing signs of breaking through also but not as much so as the remiges. Each of the feather tracts that I mentioned above is much more clearly defined and plainly shows the tips of the feathers through the skin. As yet there are no feather tracts to be found on the neck or head. The ventral tract is clearly defined by the ridge of feathers that extends down the side of the belly. The dorsal tract is easily recognized by the same appearance and is seen to divide on the back, running down on each side of the center (Plate 14, lower right). The humeral tract extends across the base of the wing in the same fashion as does the crural tract across the proximal portion of the leg. The pelvic region shows but few signs of feather development.

In photographing the young birds, I noticed that they opened their

mouths wide and raised their necks high in the air when a shadow was passed over them or when any movement on my part caused a disturbance of their position, although their eyes were still shut. When I put my finger down their throats, they immediately closed their mouths on it and started jerking their heads up and down, sucking hard all the time (Plate 14, upper right). This suction was so strong that I could almost lift the birds from the ground with them hanging to my finger in this manner. If the hole is darkened the young will extend their necks to full length, open their mouths, and call for food. On one occasion the largest of the three birds gave a faint call that sounded like a small edition of the nasal *cuk* of the adults.

The average weight is now 67.1 grams, a gain of 16.1 grams in the past twenty-four hours.

FIFTH DAY

The feet are growing rapidly and are now able to support the body. The heel, which has a thickened pad on it, now is used as a means of support, and the bird frequently rocks back and forth, at times completely falling backwards. The yolk stalk is almost entirely gone, leaving just a scar on the abdomen. The skin is much thicker, so that only by stretching and examining it carefully am I able to see the internal organs that I could so clearly see a few days ago. The feathers are starting to break through the skin and appear as sharply pointed, waxy protrusions. The primaries are the longest but the rectrices are nearly the same size. The secondaries and the alula are in the same stage of development.

The upper mandible is enlarging rapidly and in the largest bird is nearly as long as the lower mandible. The white tip, to which I referred earlier, is becoming less conspicuous and seems to be hardening. The auricular orifice is a deep hole leading into the head just behind the eye. The skin around this is drawn into the hole, thus forming a somewhat funnel-shaped opening.

The average weight of the young birds is 79.1 grams which is a gain of 12.0 grams since yesterday.

SIXTH DAY

The coverts are starting to break through the skin. The feather tracts of the abdomen are becoming well defined and the head shows the first signs of feathering. The tracts of the capital region show as small pimples under the skin, but no color can be ascertained as yet. The eyelids are thick and show two definite parts rather than one raised line as before noted. The toes are much stronger than before

and are beginning to grasp articles brought in contact with them. The oil gland is large at this stage of development and stands out as a conspicuous bump on the dorsal side at the base of the tail.

The average weight is now 98.9 grams, a gain of 19.8 grams, the greatest gain noted in any one day.

EIGHTH DAY

Owing to the more advanced development of the feathers, all the body has a dark complexion. In all the tracts that were but dark lines two days ago, there are now small pin feathers breaking through the skin (Plate 14, middle left). The flight feathers are nearly a quarter of an inch long but are still confined to the sheath, which gives the appearance more of a spine than a feather. On the largest bird one can see the tips of the feathers starting to push through the skin of the head. At this early stage it is possible to determine the sex of the birds. The two females have a distinctly darker color at the base of the bill where in the one male there is a reddish cast. The median capital apterium can even be seen extending from the right side of the base of the bill over the top of the head in midline to the occiput.

The eyelids of the largest bird may be opened although they are usually kept shut. The eyes of the other two birds are still shut. The eye is a deep slaty blue, almost a blue-black but slightly grayer. Although the larger bird opened its eyes enough to see me on numerous occasions, it showed no fear when I picked it up for study. The large swelling at the corners of the mouth is becoming smaller day by day. This reduction of size is accompanied by a toughening of the structure of this part.

The average weight of the three birds is 135.2 grams, a gain of 36.6 grams in the past two days.

TENTH DAY

All three birds have their eyes open today and for the first time they show signs of extreme activity. When placed on the ground to be photographed they scramble off the paper backwards. This method of getting around is entirely new for them, as they have no such freedom in the nest.

While I am working with them they shiver constantly, as though either greatly frightened or cold. If they show signs of fright, this is the only manner in which it manifests itself. When placed on the cloth for observation, they grip it with their feet, using their claws much more than at any previous time. The upper mandible is now

the same length as the lower mandible on all three birds and the white tip is becoming much less conspicuous (Plate 14, lower left).

The feathers are starting to break through the sheaths at the tips. This is noticed on almost all the feather tracts over the body. The feathers on the head are thick enough and long enough to give a distinct color to the head, although all of them are still well protected by the sheaths. This coloring on the head causes the median capital apterium to show very well indeed.

The average weight is 165.2 grams which is a gain of exactly 30.0 grams since the eighth day. The male now weighs the same as one of the females, and is only five grams less than the other female which has constantly been the heaviest.

TWELFTH DAY

All the feathers are through the sheaths to such an extent that they give the birds quite a bit of coloring. The crest is very much like a red pincushion, as all the feathers are still tightly bound within the sheaths (Plate 14, lower right).

The feet are slowly becoming a deep blue-gray color, changing from the flesh color they were at hatching. The toes are quite strong and the claws are sharp enough to inflict a scratch when they grasp the fingers. None of the three birds can hang to the side of a tree as yet, and when placed in such a position they quickly slip off onto the ground.

The soft enlargement at the side of the mouth is now slowly becoming a part of the rictus and it no longer looks so tremendously out of proportion to the rest of the bill. The eyes are a deep blue-gray color with a very shiny black pupil.

The average weight of the three birds is 185.5 grams, a gain of 20.3 grams in the last two days. The male is now the heaviest of the three birds and remained so throughout the nesting period.

SIXTEENTH DAY

As is to be expected, the body is taking on more the appearance of a real bird, although there is much left to do in the way of completing the plumage. The feathers are a great deal longer and that part out of the sheaths is increasing rapidly, giving the body real shape and color (Plate 15, upper left).

In trying to get the young to accept my finger as they had done earlier, before their eyes were opened, I found that they would not take it. This, I imagine, is to be expected since the young can see what is being offered them. When the male came in to feed the young

today, two of the young met him at the entrance. The parent drove them back into the nest as he pumped the food into them.

The average weight of the three young is 209.2 grams, an increase of 23.7 grams in the last four days. The bird which at first was the heaviest of the three birds is now the lightest by seven grams. It remained in this relative position throughout the remainder of the nesting period.

TWENTY-FIRST DAY

On approaching the nest one can plainly hear the buzzing noise of the young. One person likened it to the noise of a swarm of bees, which is a rather good description.

No apteria can be seen without looking under the feathers, as all the surface is well covered (Plate 14, lower left). The crest feathers have broken through the sheaths and the crest stands up when the bird is excited. This crest is by no means fully developed, and is very round and short compared to that of the adult. The feathers of the malar region are still somewhat confined to the sheaths.

I removed all the young from the nest as usual and placed them on the trunk of a tree. This time they remained well fastened in this position and one of them made frequent attempts to climb up out of reach. None of the young showed any signs of fear, and permitted me to handle them as much as I pleased.

The average weight of the three birds is 225.6 grams, which is a gain of 16.4 grams within the last four days.

TABLE I.

DAILY GAIN IN WEIGHTS OF YOUNG PILEATED WOODPECKERS

Days old	*Date*	*Red**	*White**	*None**
1	5/23/39	20.4 gr.	36.6	29.9
2	5/24	27.6	50.8	45.1
3	5/25	40.5	59.5	53.2
4	5/26	56.5	73.5	71.5
5	5/27	62.3	89.6	85.4
6	5/28	87.6	109.1	100.0
7				
8	5/30	126.5	138.8	140.2
9	5/31	155.3	155.4	142.5
10	6/1	163.5	168.5	163.5
11	6/2	172.1	170.8	172.1
12	6/3	190.0	186.0	180.5
13	6/4	199.3	194.2	192.0
14	6/5	206.1	199.7	196.1
15	6/6	211.0	200.4	200.0
16	6/7	213.5	203.3	210.7
21	6/12	243.6	209.1	224.2
24	6/15	244.4	218.7	227.3
26	6/17	All birds left nest on this day.		

*Colors used to differentiate the birds in the nest.

TWENTY-SIXTH DAY

All of the young left the nest on this day (Plate 14, lower right). Climbing to the entrance, they jumped out and fluttered to the base of a near-by tree. Climbing up by slow jumps, they reached the top ready for a similar fluttering jump to the base of another tree. By such successive actions, they spent the first few days learning how to fly from tree to tree. Within four days they were well able to fly around with their parents, but still confined their flights to short trips.

SUMMARY

1. The young Pileated Woodpeckers do not all hatch at the same time, for the nest contains young of considerable variation in weight and development.

2. The newly hatched young is completely naked, extremely awkward, and very ugly, and weighs less than fifteen grams.

3. The skin on the abdomen in particular is as thin as tissue paper for the first few days, but becomes much thicker and stronger by the fifth day.

4. The bill is very peculiar in shape, with the lower mandible very large and broad at the base. The upper mandible is shorter than the lower one and lies in it much in the fashion of a smaller boat stacked in a larger one.

5. The ends of both mandibles have a white portion that is of a different texture from the rest of the bill. This white portion becomes less conspicuous and harder as the bird develops in age until shortly after the bird leaves the nest when this white part sloughs off.

6. The corners of the mouth have an abnormally large structure, the exact nature of which is not yet known. This structure gradually decreases in size and by the fifteenth day has lost its abnormal appearance and become a portion of the rictus.

7. The first signs of feather growth appear on the third day as small dark lines under the skin. The pterylae can be seen fairly well even at this early age.

8. By the fourth day, the young birds open their mouths and call for food when a shadow is passed over them or the entrance to the hole is darkened. On this day the feathers first break through the skin.

9. The eyes of the largest bird in the nest may be opened for the first time on the eighth day, though usually they are kept shut until the tenth day.

10. By the eighth day one can determine the sex of the young by the darker color on the forehead of the females, for the head feathers start development on about the seventh day.

11. The young climb to the entrance of the hole to receive food from the parents on about the fifteenth day.

12. The young left the nest in question for the first time on the twenty-sixth day, but in other nests observed, this time has varied from the twenty-second to the twenty-sixth day.

13. Even after leaving the nest the young birds are under parental care for some time.

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NEST SURVIVAL OVER WINTER

BY H. ELLIOTT McCLURE

IN the course of a study of the life history of the Mourning Dove, *Zenaidura macroura* (Linn.), in southwestern Iowa during 1938, it became evident that the presence of old nests of other birds was important in the economy of the dove. Following the winters of 1938–39 and 1939–40, all of the nests that had withstood winter rigors at Lewis, Iowa, were counted. The town covers an area of approximately 160 acres in which there were over 1600 trees an inch or more in diameter. In the summers of 1938 and 1939, all of these trees were examined every two days in an effort to discover Mourning Dove nests. Incidentally, the nests of other birds were noted, too. When the post-winter survey was made in March of 1939 and 1940, it was possible not only to record the nests that were remaining, but also to indicate those that had been used by doves the previous season.

Table I lists the information concerning this post-winter survey. Any nest that had retained its structure, such as high walls in that of the Eastern Robin or the Bronzed Grackle, was considered in good condition. Any one that was falling apart was considered in poor condition. Of those found in both years, more than sixty per cent were in good condition. Nests of the Eastern Robin ranked first in survival for the two years. Those of the Baltimore Oriole were second in number.

The nest of the robin is an important aid to Mourning Doves in their nesting. It is large enough to contain the dove nest that is often built within it, and sturdy enough to survive bad storms, so that dove-nesting success is higher in the robin nest than in one of dove construction alone. Nineteen per cent of the robin nests surviving each winter had already supported dove nests during the past

TABLE I

Number of Bird and Fox Squirrel Nests Surviving Winter Winds on 160 Acres of Town Property, Lewis, Iowa.

1938–1939

Nest	*Number of nests*	*Condition* Good	Poor	*Per cent of total*	*Number used in 1938 by*
Eastern Robin (*Turdus m. migratorius*)	127	70	57	57.0	Dove, 18 English Sparrow, 1
Baltimore Oriole (*Icterus galbula*)	29	10	19	13.0	
Mourning Dove (*Zenaidura macroura*)	26	24	2	11.6	
Bronzed Grackle (*Quiscalus quiscula aeneus*)	15	9	6	6.7	Dove, 9 English Sparrow, 1
English Sparrow (*Passer domesticus*)	2	2	0	.9	
Blue Jay (*Cyanocitta c. cristata*)	4	1	3	1.7	
Catbird (*Dumetella carolinensis*)	3	3	0	1.3	Dove, 1
Fox Squirrel (*Lasiurus niger rufiventer*)	17	8	9	7.6	
Total	223	127	96	99.8	Dove, 28; English Sparrow, 2

1939–1940

					Number used in 1939 by
Eastern Robin	98	66	32	40.0	Dove, 26
Baltimore Oriole	45	30	15	18.2	
Mourning Dove	29	22	7	11.3	
Bronzed Grackle	17	13	4	6.9	Dove, 8
English Sparrow	5	5	0	2.0	
Blue Jay	4	3	1	1.6	Dove, 1
Eastern Kingbird (*Tyrannus t. tyrannus*)	2	1	1	.8	
Warbling Vireo (*Vireo g. gilvus*)	3	3	0	1.2	
Catbird	3	2	1	1.2	
Fox Squirrel	40	32	8	16.2	Dove, 2
Total	246	177	69	99.4	Dove, 37
Two-year total	469	304	165	99.6	Dove, 65; English Sparrow, 2

season. When the dove moves in from the south in the latter part of March and April, it seeks these old robin nests and selects them for nesting sites. Because of the abundance of the robin, there were many more of its nests available than those of the Bronzed Grackle. However, the Bronzed Grackle built in small colonies in evergreens scattered throughout the town. The first choice of the dove for nesting sites in the spring was these evergreens. Grackles finish their brood raising in midsummer and their nests then become available to the dove. Fifty-three per cent of all grackle nests found with-

standing the winter had supported dove nests the past season. The use of these nests was also high in the spring.

During April of 1938, ten per cent of the dove nests were in old nests of other birds. In 1939 this figure increased to twenty per cent, and in 1940 it reached twenty-seven per cent. The three-year average use of other birds' nests in April was nineteen per cent.

Table II lists information concerning the species of trees in which old nests were found, the number and percentage of each species of tree as related to the total number of trees bearing old nests, and the numbers and percentages of each species of bird whose nest was found in each tree species. This table is self-explanatory and need not be discussed except for certain items. Twenty-three species of trees supported old nests following the winter of 1938–39, and twenty-two species following the winter of 1939–40. It will be noted that American elm constituted 48.6 per cent of the trees bearing old nests and had among its branches 45.6 per cent of all the nests. Second in importance, ranking as a tree supporting many nests, was box elder, and third was red pine. The relationship between the percentage of trees of each species and percentage of nests that this species supported was very close; that is, as in the box elder, 16.9 per cent of the trees bore 15.2 per cent of the nests. Further, a perusal of Table II will show also the types of trees most used as nesting sites by each species building durable nests. Table II also shows the percentage of each species of tree present in Lewis. This gives a comparison between the percentage of total trees and the percentage of trees of each species bearing old nests. From this we have data indicating the choice of trees by the several species of birds whose nests have lasted over the winter.

TABLE II

SPECIES OF TREES AND SHRUBS BEARING OLD NESTS AND THE KINDS OF NESTS IN THEM

Tree	*Percentage of total trees in Lewis*	*Number having old nests*			*Nests*	*Number*		
		1939	*1940*	*total*		*1939*	*1940*	*total*
American elm (*Ulmus Americana*)	33.0	95	89	184	Baltimore Oriole	25	36	61
					Fox squirrel	7	27	34
					Eastern Robin	61	45	106
					Blue Jay	2	2	4
					Mourning Dove	2	3	5
					Bronzed Grackle	1	0	1
					Warbling Vireo	0	3	3
					Total	98	116	214
Per cent of total		47.2	50.0	48.6		44.0	47.1	45.6

TABLE II (Cont.)

SPECIES OF TREES AND SHRUBS BEARING OLD NESTS AND THE KINDS OF NESTS IN THEM

Tree	Percentage of total trees in Lewis	Number having old nests 1939	1940	total	Nests	Number 1939	1940	total
Box elder (*Acer negundo*)	15.0	35	29	64	Eastern Robin	33	17	51
					Fox squirrel	2	5	7
					English Sparrow	1	0	1
					Baltimore Oriole	1	4	5
					Blue Jay	1	4	5
					Mourning Dove	0	1	1
					Eastern Kingbird	0	1	1
					Bronzed Grackle	0	1	1
					Total	38	33	71
Per cent of total		17.5	16.2	16.9		17.0	13.4	15.2
Red pine (*Pinus resinosa*)	1.0	18	11	29	Mourning Dove	10	10	20
					English Sparrow	2	0	2
					Bronzed Grackle	9	9	18
					Eastern Robin	1	3	4
					Total	22	22	44
Per cent of total		9.0	6.1	7.5		9.9	9.0	9.4
Soft maple (*Acer saccharinum*)	7.0	10	9	19	Fox squirrel	6	4	10
					Eastern Robin	5	1	6
					Baltimore Oriole	0	5	5
					Blue Jay	0	1	1
					Total	11	11	22
Per cent of total		5.0	5.0	5.0		4.9	4.4	4.6
Blue spruce (*Picea pungens*)	.4	2	4	6	Mourning Dove	7	5	12
					Bronzed Grackle	1	0	1
					English Sparrow	0	5	5
					Total	8	10	18
Per cent of total		1.0	2.2	1.6		3.5	4.0	3.7
Norway spruce (*Picea abies*)	.7	5	3	8	Eastern Robin	3	3	6
					Mourning Dove	5	6	11
					Bronzed Grackle	0	3	3
					Total	8	12	20
Per cent of total		2.5	1.6	2.0		3.5	4.8	4.2
Ash (*Fraxinus* spp.)	3.0	7	5	12	Eastern Robin	5	2	7
					Fox squirrel	1	2	3
					Baltimore Oriole	1	0	1
					Blue Jay	0	1	1
					Total	7	5	12
Per cent of total		3.5	2.8	3.1		3.7	2.0	2.8
Silver poplar (*Populus alba*)	.3	2	1	3	Baltimore Oriole	1	0	1
					Eastern Robin	1	1	2
					Total	2	1	3
Per cent of total		1.0	.5	.7		.9	.4	.6
Apple (*Pyrus malus*)	10.0	5	3	8	Eastern Robin	2	2	4
					Bronzed Grackle	2	0	2
					Catbird	1	1	2
					Total	5	3	8
Per cent of total		2.5	1.6	2.0		2.2	.17	1.9

TABLE II (Cont.)

SPECIES OF TREES AND SHRUBS BEARING OLD NESTS AND THE KINDS OF NESTS IN THEM

Tree	Percentage of total trees in Lewis	Number having old nests 1939	1940	total	Nests	Number 1939	1940	total
Tamarack (*Larix laricina*)	.2	3	2	5	Eastern Robin	3	2	5
					Bronzed Grackle	1	4	5
					Mourning Dove	1	0	1
					Total	5	6	11
Per cent of total		1.5	1.2	1.3		2.2	2.4	2.3
Juniper (*Juniperus* spp.)	2.0	1	3	4	Eastern Robin	1	1	2
					Mourning Dove	0	3	3
					Catbird	0	1	1
					Total	1	5	6
Per cent of total		.5	1.6	1.0		.4	2.0	1.2
Mulberry (*Morus rubra*)	1.0	1	3	4	Eastern Robin	1	2	3
					Eastern Kingbird	0	1	1
					Total	1	3	4
Per cent of total		.5	1.6	1.0		.4	1.7	1.0
Hackberry (*Celtis occidentalis*)	.7	3	0	3	Blue Jay	1	0	1
					Eastern Robin	1	0	1
					Mourning Dove	1	0	1
					Total	3	0	3
Per cent of total		1.5		.7		1 3		.6
Chinese elm (*Ulmus parvifolia*)	2.0	1	3	4	Mourning Dove	1	0	1
					Eastern Robin	0	3	3
					Total	1	3	4
Per cent of total		.5	1.6	1.0		.4	1.7	1.0
Catalpa (*Catalpa catalpa*)	1.5	2	3	5	Eastern Robin	2	3	5
Pear (*Pyrus communis*)	.5	1	2	3	Eastern Robin	1	3	4
Lilac (*Syringa vulgaris*)		2	1	3	Catbird	2	1	3
Walnut (*Juglans nigra*)	5.6	1	0	1	Baltimore Oriole	1	0	1
Black locust (*Robinia pseudoacacia*)	.2	1	0	1	Eastern Robin	1	0	1
Hard maple (*Acer saccharum*)	.5	1	0	1	Eastern Robin	1	0	1
Plum (*Prurus domestica*)	5.0	1	2	3	Eastern Robin	1	2	3
Cottonwood (*Populus deltoides*)	.4	1	1	2	Eastern Robin	1	2	3
Linden (*Tilia americana*)	.1	1	1	2	Fox squirrel	1	1	2
Spirea (*Spirea* sp.)		0	1	1	Catbird	0	1	1
Cherry (*Prunus avium*)	5.5	0	1	1	Eastern Robin	0	1	1
Total		199	179	378		223	246	469

It is obvious that strongly constructed nests would withstand winter winds better than poorly constructed ones. In two years, out of twenty-five hundred Mourning Doves' nests, only fifty-five withstood the winter. Since the dove builds a flimsy nest, only nests in the more protected places would last. As no count of total numbers of robin nests was made, we do not know what percentage of the total built the old ones represented. Other nests would grade in between these two extremes.

SUMMARY

Old nests of birds and fox squirrels that have withstood winter winds were counted in Lewis, Iowa, in March of 1939 and 1940. A total of 469 nests of nine species of birds and one species of squirrel were found in twenty-three species of trees. Nests surviving the winter in the greatest numbers were those of the Eastern Robin, Baltimore Oriole, fox squirrel, and Mourning Dove. Trees supporting the greatest numbers of old nests were elm, box elder, and red pine.

Nebraska Game Forestation and Parks Commission
Upland Game Bird Survey
Ord, Nebraska

CROSS-MATING OF CANADA GEESE WITH EMDEN GEESE

BY ALEXANDER W. BLAIN, M.S., M.D., F.A.C.S.

Plate 16

THE crossing of certain wild ducks and pheasants has been carefully studied. The condition is undoubtedly much rarer in the wild state than in birds kept in a semi-domesticated state upon which most of the studies have been based. J. C. Phillips discusses this in an interesting article entitled 'A Further Report on Species Crosses in Birds' (Genetics, 6: 366–383, 1921). Anyone who has bred various types of pheasants in captivity has had much the same experience. The crossing of the Mallard with the white call-duck has proved a troublesome problem in my flock, and while the offspring all reverted to the wild state and nested on my property outside of the pen, there was never any trouble in distinguishing the interesting hybrid as it flew from the nest or was seen in the water.

The polygamy on the part of some birds is very well known. This is especially true in this part of the country among Red-winged Blackbirds. On the other hand, the belief has been quite constant on the part of ornithologists and hunters that the Canada Goose (*Branta*

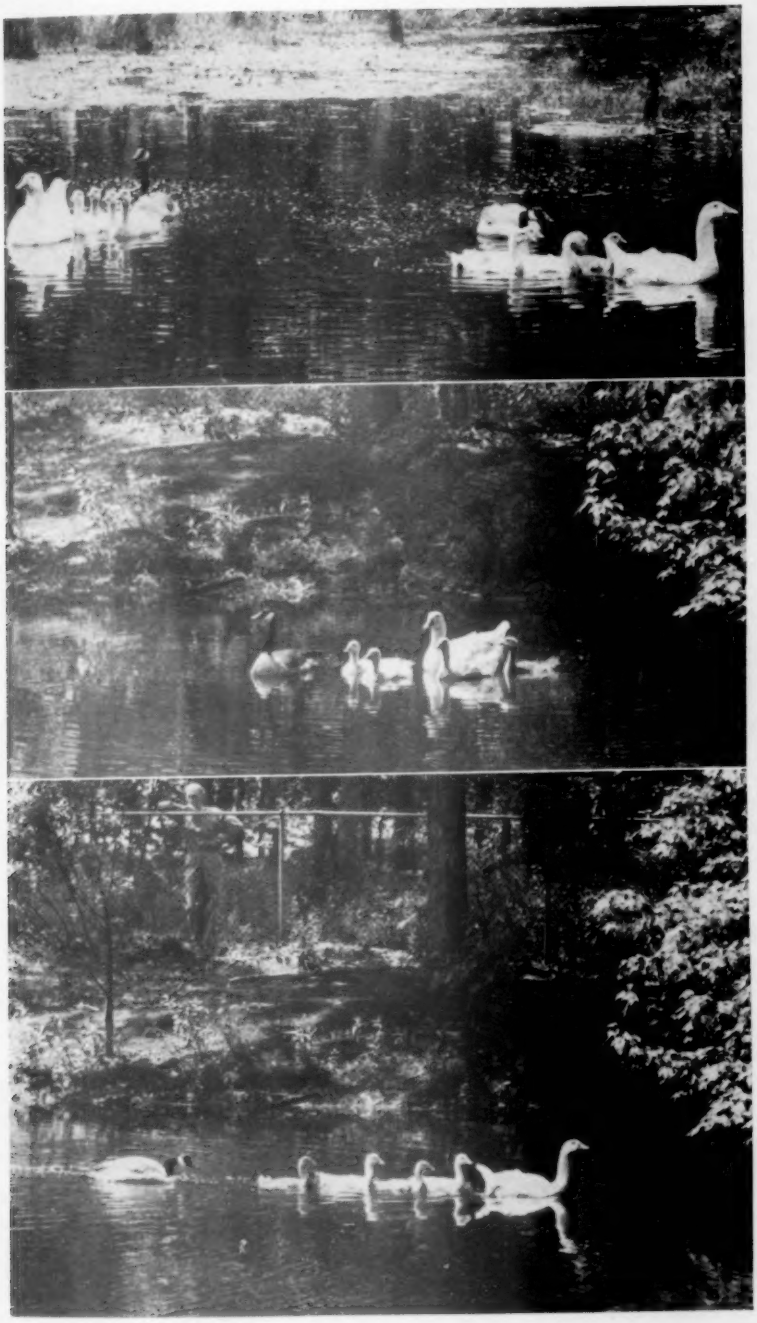
canadensis canadensis) mates for life. To quote Francis Kortright in 'The Ducks, Geese and Swans of North America' (1942, American Wildlife Institute, publishers): "Contrary to the habits of ducks and geese which seek new spouses each year, the Canada Goose mates for life; should either partner die or be killed, the survivor, it is said, never pairs again. (No verification of this statement has been found by the author in his researches nor, to his knowledge, has it been disproved.)" It is not unusual, however, to have a large flock of Canada Geese of mixed genders penned together in an enclosure, and have no mating whatever take place. The following incident is, I believe, quite unusual.

A pair of Canada Geese which I had had for some time finally mated. For some reason the nest was destroyed. The following year they rebuilt their nest. Eggs were deposited, but no goslings produced. In the fall of 1941 I placed a pair of tame domesticated Emden geese of the pure white barnyard variety in the same enclosure with the Canadas. I was surprised to find, early in the spring of 1942, that each of the Emdens and Canadas had cross-mated, with each newly mated pair producing and nicely bringing to maturity four goslings. In each family some of the birds resembled the Canadas and others showed the white feathers of the Emden. One bird was pure white.

None of the offspring were killed and all are still under observation, but all were removed from the enclosure. This year, 1943, with the Emdens and young hybrids all removed, the Canadas have again built a nest, and when last observed (April 14), the female was sitting very closely and the male was in characteristic 'on guard' position. The sex of the hybrids is not known, but they are being kept under observation many miles from where they were hatched, and it will be interesting to see whether they choose to mate. While I was watching them recently, a few birds from a wild flock came into their enclosure.

These observations are perhaps not conclusive, yet they would tend to show that the Canada Goose is not averse to changing its mate under certain conditions and to a bird of another genus. The statement should, perhaps, not be furthered that the Canada Goose mates for life, especially not under the environment of semi-domestication.

During the fall migration of 1943, two of the hybrids which I retained in my enclosure (including the white bird noted above) disappeared. Early this spring (March, 1944) they returned. It is possible they migrated to some other sanctuary not too far away from their birthplace. In April, three of the other hybrids, which had



CROSS-MATED CANADA GEESE AND EMDEN GEESE.

been removed in the fall of 1942 several miles from my enclosure, returned and joined the others. The hybrids of the 'Canadian-type' cannot be distinguished from the full-blooded parents.

Detroit
Michigan

THE RECORDS OF A PROFESSIONAL DUCK HUNTER

BY HAROLD B. WOOD

DEFINITE records of the number of birds killed in large numbers by sportsmen or professional gunners are rare because usually none are kept. Lamentable as mass killings and continued shooting are, definite records of birds killed over a period of years show interesting figures. They suggest the relative prevalence of various species during past years, indicate migrational seasons, suggest variations in bird populations, show present rarities, and add unknown species to a local list. Some colloquial names are learned.

About 17,000 waterfowl fell in fifty-three years before the gun of the professional gunner of the olden days whose records are the basis of this account. He kept daily accounts of his bags, and his diary I was permitted to copy. It is reminiscent of the days of fifty years ago when every meat market had its racks festooned with many species of waterfowl The maker of these records, Hardie Disney, was born in 1873 and lives on the banks of the Susquehanna River opposite Harrisburg. He began to shoot when eleven years old, in 1884, and bagged fourteen birds the first day. Later, he professionally shot game to supply the five hotels of Harrisburg, and received a dollar a duck, with three to five dollars apiece for Canvasbacks. The hotels offered a roast-duck dinner, with all the trimmings, for $1.50. It was a gunner's living in those days. In the fall of 1906, for instance, Disney's accounts show that he received $161.75 for 445 ducks. He shot for a living, although with sad consequences which he could not foretell.

The ducks seemed to be in inexhaustible quantities and there were no restrictions on gunning. "There were thousands of ducks in those days, and every year there was more," as he expresses it. "When a boy, I got up at 4 A. M. and went out and killed ducks before I went to school. I ducked in March and April." All shooting was done from a boat as he and his 'buddy' paddled in the shallow, mile-wide Susquehanna. He sometimes used wooden decoys, never live ones, and never baited the water. He shot among the small, grassy islands called 'patches,' where the ducks collected. The de-

sirable ducks were Canvas-backs, Black Ducks, Pintails, Mallards, and Redheads; others he calls 'trashy.'

"We were allowed to shoot all we wanted. The law made it eight months to shoot 'em. We had a right to kill all the ducks we could. The ducks were here in countless thousands";—but now he states: "Since you can't sell any ducks now, the daily bag should be limited to two ducks. The season should not be open before December [here], after the young ducks can fly." The ducks are here from late September until the river freezes over in December.

From 1884 to 1898 he shot 7000 ducks and 22 geese, he declares. From the autumn of 1897 to the autumn of 1938, his diary shows he shot 9185 waterfowl of 27 species, and 72 other birds. Prior to 1897 he kept daily records on slips of paper but left all these behind when he moved to a new home. After 1897 all daily records were written in a blank book, which diary with many photographs of the bags, has recently been acquired by the Archives Division of the Pennsylvania State Library.

In 1892, 1894, and 1895 he had his biggest days, bagging as high as 80 to 93 ducks in one day. He killed as many as 160 in October; 446 were shot during the autumn of 1906—his top limit; 54 Pintails in one day; 198 ducks during the week of April 11, 1904; 95 Blacks and Mallards in four days in the spring of 1905; 30 White-winged Scoters out of a flock of 50. His 2587 ducks shot in the autumn and 2374 in the spring during thirteen years indicate the result of unrestricted shooting.

Spring duck shooting was stopped by the Pennsylvania legislature in 1919. The wisdom of this decision as a measure for protecting the birds is shown by Disney's results. From 1897 to 1923, during open seasons, he shot 22 Canada Geese in the fall and 58 in the spring days of migration. Large ducks, such as Redheads, Blacks, Mallards, Canvas-backs, and Pintails, are most numerous in March, but few are found in April. During thirteen years of gunning, Disney shot 389 Mallards in the fall, 224 in the spring; Black Ducks, 250 in the fall, 668 in the spring; Pintails, 366 in the fall days, 278 in the spring; Redheads, 96 in the fall, 292 in the spring; Scaups, 694 in the fall, 635 in the spring; Golden-eyes, 158 in the fall, 52 in the spring; Buffle-heads, 245 in the fall, 128 in the spring; Scoters, 182 in the fall, 10 in spring shooting. These fall gunning days numbered 354; the spring, 240. The totals averaged 6.7 of the above waterfowl per day in the fall, 9.5 in the spring gunning. The days of gunning were mostly during October and November and the following March and April.

Monthly variations are shown by the collated records. During the first quarter of this century, Disney shot during forty-one days in September (getting 26 Black Ducks and others); 304 days in October (256 Blacks); 255 days in November (204 Blacks), and thirty-four days in December, until the river froze over, netted 36 Black Ducks and others. He killed 18 geese in March, two in November, and one each in December and April.

During the fall months and early spring, the river serves principally as a resting place for the ducks. When low, it affords some feeding. The river varies greatly in depth, in relation to the precipitation over the large watershed. The records for fifty years show the average spring stage is only 1.6 feet over that of the fall.

Some rare birds fell before this hunter's guns. A European Baldpate (*Mareca penelope*) was shot March 25, 1908. A Surf Scoter (*Melanitta perspicillata*), shot November 2, 1908, and a Golden Plover (*Pluvialis dominica dominica*), shot October 26, 1920, with a Shoveller, shot September 16, 1908, and a Lesser Snow Goose, shot October 23, 1916, were mounted at the time and recently were presented by Mr. Disney to the State Museum. His records show that he shot six eider ducks on November 26, 1920, six on December 6, 1920, and two in 1929. He states that they were King Eiders. Old State Museum records note that he sold to the museum two King Eiders; one of these, a certain King Eider (*Somateria spectabilis*), was found recently in the attic of the museum. Bill Minick, his 'buddy,' on November 12, 1930, shot a Blue Goose (*Chen caerulescens*) which was mounted and added to the State Museum. All these birds were shot on the Susquehanna at Harrisburg and are very rare for this district—the only records. Golden Plovers, giving the only records for this area, were shot in 1920, 1922, and 1919 (two). In his day, Disney had shot Long-billed Curlews here and saw Turnstones. He never saw an albino duck. He saw a Passenger Pigeon in 1878 or 1879.

After 1920, when the Biological Survey took over the banding of birds, he shot 1901 ducks, but not one had been banded. Among 350 Canada Geese that he shot (85 since 1897), one which was shot in 1930 carried a band put on by Jack Miner the previous fall.

Colloquial names applied to waterfowl, as recorded in the Disney diary, are: Horned Grebe, chickenbill; Gadwall, gray duck; European Widgeon, penelope widgeon; Baldpate, ballphate; Pintail, sprigtail; Shoveller, spoonbill; Redhead, red neck; Ring-necked Duck, acecorn, acorn, or ringbill; Scaup, blackhead, bay blackhead, broadbill, blue-

bill, and bluehead; Golden-eye, whistler; Buffle-head, piddy; White-winged Scoter, muscovy, also coot; Surf Scoter, sea scoter; Ruddy Duck, stiffy; Merganser, fisherman, fish duck. The 'blackhead,' of which 1746 were shot, was possibly the Greater Scaup Duck, and the 'bluebill' and 'bluehead' perhaps the Lesser. The 'shad duck' or 'shaddy,' with two recorded, was probably a young Scaup, according to his description.

Other birds which fell before the gun of this erstwhile hunter included 19 other plovers, Wilson's Snipe, Bob-white and Pheasants, a Wild Turkey, rails and doves. When hunting he assumed the attitude of others, that the quantity was limitless, but he now appreciates the fact that such gunning has, at least in his neighborhood, practically exterminated such birds as the Ruddy Duck, Gadwall, Redhead and Brant, and has made the Canvas-back, Ring-neck, Buffle-head, and Scoter such local rarities that to discover one is an event.

WATERFOWL SHOT BY HARDIE DISNEY AT HARRISBURG, PENNSYLVANIA, 1897 TO 1938

Common Loon, *Gavia immer immer*	1
Horned Grebe, *Colymbus auritus*	2
Whistling Swan, *Cygnus columbianus*	16
Canada Goose, *Branta canadensis canadensis*	85
Snow Goose, *Chen hyperborea*	8
American Brant, *Branta bernicla hrota*	9
Common Mallard, *Anas platyrhynchos platyrhynchos*	909
Black Duck, *Anas rubripes tristis*	1534
Gadwall, *Chaulelasmus streperus*	81
European Widgeon, *Mareca penelope*	3
Baldpate, *Mareca americana*	269
American Pintail, *Dafila acuta tzitzihoa*	902
'Teal,' *Nettion carolinense* and *Querquedula discors*	189
Shoveller, *Spatula clypeata*	21
Wood Duck, *Aix sponsa*	25
Redhead, *Nyroca americana*	639
Ring-necked Duck, *Nyroca collaris*	100
Canvas-back, *Nyroca valisineria*	413
Greater Scaup Duck, *Nyroca marila*	1751
Lesser Scaup Duck, *Nyroca affinis*	196
American Golden-eye, *Glaucionetta clangula americana*	274
Buffle-head, *Charitonetta albeola*	503
King Eider, *Somateria spectabilis*	9
White-winged Scoter, *Melanitta deglandi*	336
Surf Scoter, *Melanitta perspicillata*	1
Ruddy Duck, *Erismatura jamaicensis rubida*	680
Merganser, *Mergus* sp.?	214
American Coot, *Fulica americana americana*	16

Harrisburg
Pennsylvania

A TWO-YEAR BIRD CENSUS ON SAN JUAN ISLAND, WASHINGTON

BY MALCOLM R. MILLER

THE San Juan islands comprise a large group of islands situated between the northwestern coast of Washington and the southern end of Vancouver Island. San Juan Island, the second largest of these islands, is about eighteen miles long by seven miles wide. The flora and fauna are for the most part similar to those found on the mainland of northwestern Washington. The greatest difference between the mainland and the islands is in the greater dryness of the latter due to their rocky nature in addition to a small rainfall as compared with the mainland. As indicated by the fauna and flora the region is transitional. An abundant and varied group of birds is found on the islands; a complete list of the species was published in 'The Murrelet' for September, 1935.

During the summers of 1936 and 1937, the bird populations of three types of areas were counted on San Juan Island. The areas chosen for survey were: (1) a fairly heavily timbered coniferous forest, (2) a meadow, and (3) an inland second-growth. A previous investigation of these stations showed that they were representative of the various types of biotic areas on San Juan Island, as regards both vegetation and abundance of birds. The physical conditions of these areas has been constant for a number of years and seems likely to remain unchanged for some years to come.

W. W. Cooke, in a report of the U. S. Biological Survey (1915), suggests that in taking bird censuses, a pair of birds should be assumed for each male bird seen or heard. Other workers, such as Shaver (1933), consider this method inaccurate and state that the total count should be attained by counting only those birds actually seen or heard. The writer's observations show that almost as many females as males are seen due to flushing as one passes close to a nesting spot. Hence, in this survey, only birds actually seen or heard have been counted.

Each area was covered approximately once a week. In each report the birds were listed as nesting or breeding residents and feeding birds, or as birds nesting in some other area but using the area under survey as a feeding ground. The majority of the birds counted in these three areas from the first of June until the twenty-seventh of July were residents. After this time the greater number of birds in the second-growth area were feeders or non-residents, while in the forest

and meadow areas there were only a few non-resident feeders and a continually diminishing number of original residents.

The meadow area consists of approximately thirty acres of grassy meadowland. It is bounded on the east by a fairly well-traveled road separating the meadow from an evergreen forest, and on the three other sides by similar meadowland from which it is separated by fences, ditches, and small bushes. Except for a sparse scattering of thistles and small bushes, the territory consists largely of a grassy growth.

The second-growth area consists of fifteen acres of scattered willow, alder, and madroña trees. At intervals there are small open patches of scrubby firs and several dead stubs. This area is bounded on the north and east by a thick, deciduous area and on the south and west by cultivated fields.

The coniferous-forest area consists of ten acres of fairly heavy evergreen growth. The undergrowth varies in density, consisting mainly of bracken, sweet briar, and nettle. Except for two small groups of alders, the area is mainly homogeneous in nature.

TABLE 1

BIRD POPULATION OF A MEADOW AREA AT INTERVALS DURING THE SUMMERS OF 1936 AND 1937

Date	*6–8–'36*	*6–13–'37*	*6–15–'36*	*6–20–'37*	*6–25–'36*	*7–2–'37*	*7–9–'36*	*7–10–'37*	*7–17–'36*	*7–20–'37*	*7–22–'36*	*7–28–'37*	*8–3–'36*	*8–1–'37*	*8–10–'36*	*8–12–'37*	*8–18–'36*
Nesting residents																	
1. Dwarf Savannah Sparrow	25	28	24	23	24	41	23	38	25	18	26	20	18	15	16	10	8
2. Puget Sound Sparrow	13	6	9	10	10	12	10	14	8	9	9	10	10	11	12	11	8
3. Rusty Song Sparrow	12	4	10	6	6	10	6	12	7	4	6	7	8	10	10	10	0
4. Western Meadowlark	10	6	12	8	10	10	10	8	12	8	8	6	4	5	8	6	2
5. Brewer's Blackbird	4	6	6	16	4	21	4	0	2	0	0	0	0	0	0	0	0
6. Western Chipping Sparrow	6	2	4	3	2	4	0	3	2	3	4	0	0	0	0	0	0
7. California Yellow Warbler	3	4	1	4	1	4	1	4	0	1	0	0	0	0	0	0	0
8. Killdeer	4	0	2	0	0	0	2	0	2	0	0	0	0	0	0	0	0
9. Lutescent Warbler	1	2	2	1	0	4	1	4	1	0	0	0	0	0	0	0	0
10. Pacific Nighthawk	0	0	0	0	2	0	2	0	4	0	4	0	0	0	0	0	0
Totals	78	58	68	72	59	106	59	83	63	43	56	43	40	41	46	39	18
Feeding birds																	
1. Willow Goldfinch	2	0	6	3	0	5	4	6	16	12	24	18	20	15	18	16	18
2. Northwestern Robin	2	3	4	5	8	6	4	3	0	4	2	2	2	2	0	4	3
3. Violet-green Swallow	2	2	2	2	6	0	4	0	2	0	0	2	2	2	0	4	2
4. Barn Swallow	0	2	2	4	4	6	0	0	0	0	0	0	0	0	0	0	0
5. Northwestern Flicker	4	1	0	0	0	0	0	0	0	0	14	0	0	0	14	5	18
6. Seattle Wren	0	0	0	0	0	4	0	3	0	3	0	0	0	3	0	1	5

TABLE 2

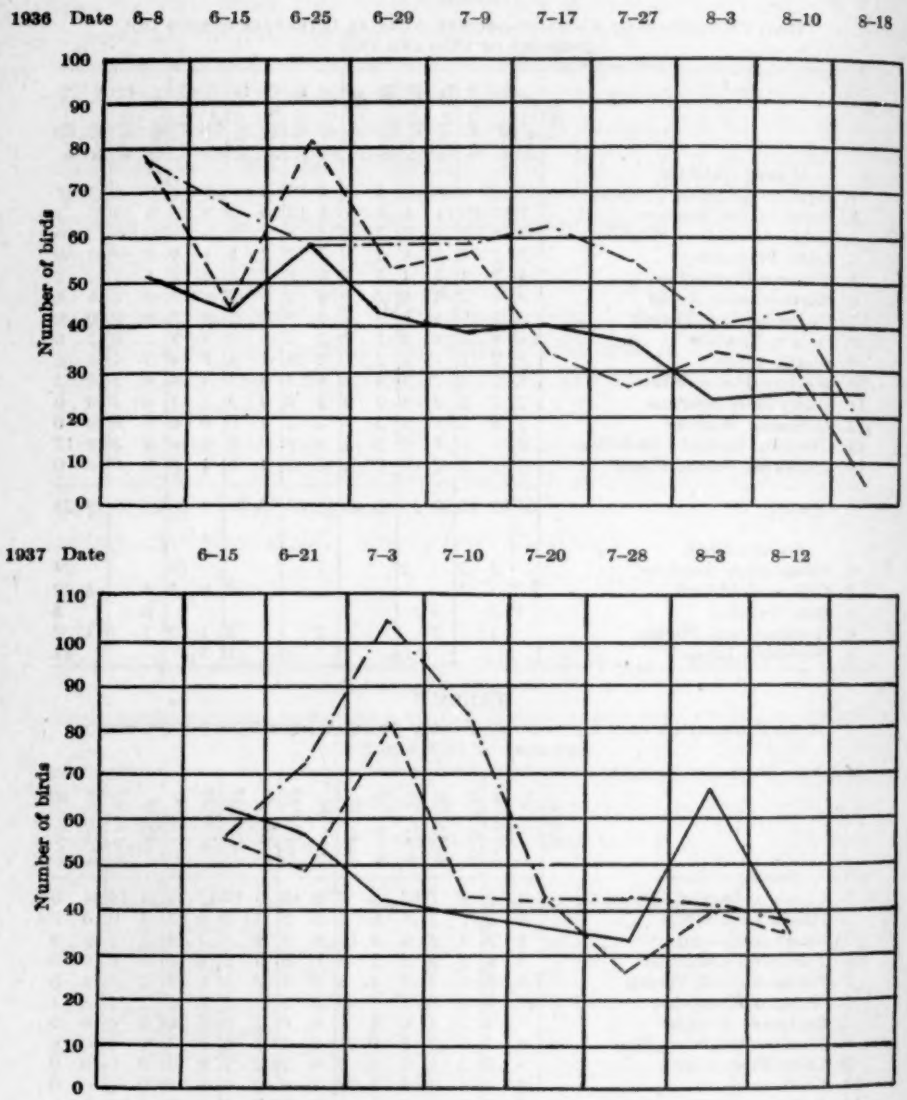
BIRD POPULATION OF A SECOND-GROWTH AREA AT INTERVALS DURING THE SUMMERS OF 1936 AND 1937

	Date	6-9-'36	6-15-'37	6-18-'36	6-21-'37	6-22-'36	6-27-'36	7-3-'37	7-9-'36	7-10-'37	7-18-'36	7-20-'37	7-27-'36	7-28-'37	8-4-'36	8-11-'37	8-11-'36	8-18-'36
Nesting residents																		
1. Western Chipping Sparrow		8	12	6	10	6	4	8	6	10	8	6	8	12	8	6	7	2
2. Puget Sound Sparrow		7	12	10	11	6	4	9	4	12	6	6	9	15	8	10	8	3
3. California Yellow Warbler		7	4	5	2	5	2	1	3	4	1	1	1	4	0	0	2	0
4. Little Flycatcher		3	2	4	3	4	3	1	2	2	2	1	1	5	0	0	0	0
5. Western Flycatcher		4	2	3	2	4	3	2	4	2	2	2	2	2	1	1	1	1
6. Northwestern Robin		3	4	2	4	4	2	2	4	2	6	2	4	3	0	2	0	8
7. Russet-backed Thrush		2	3	2	3	3	3	1	4	3	2	2	0	3	0	0	0	0
8. Oregon Towhee		4	4	4	4	2	1	2	2	4	3	2	3	5	2	0	2	6
9. Seattle Wren		2	2	2	2	2	2	2	1	8	1	4	5	4	5	4	5	5
10. Western House Wren		3	2	3	2	3	4	3	4	3	4	3	4	4	0	3	0	2
11. Rusty Song Sparrow		2	2	3	2	4	2	0	2	0	3	2	3	7	0	2	0	0
12. Lutescent Warbler		2	5	1	6	2	3	2	2	2	1	0	0	0	0	0	0	0
13. Chestnut-backed Chickadee		0	6	0	4	0	0	3	0	6	0	0	6	0	6	5	8	12
14. California Purple Finch		2	2	0	2	0	0	4	1	3	1	0	1	0	0	0	0	0
Totals		51	62	45	57	45	43	40	39	61	40	32	37	63	24	33	25	25
Feeding birds																		
1. Violet-green Swallow			2	2		2			3					10				24
2. Willow Goldfinch												2	6	5	6		8	22
3. Barn Swallow		2	2		2			2							6			8
4. Northwestern Flicker			1		2				2			2	1	2	1		1	2
5. Shufeldt's Junco												1	3					11

TABLE 3

BIRD POPULATION OF A CONIFEROUS FOREST AREA AT INTERVALS DURING THE SUMMERS OF 1936 AND 1937

	Date	6-11-'36	6-14-'37	6-16-'36	6-22-'37	6-22-'36	6-26-'36	7-4-'37	7-9-'36	7-10-'37	7-18-'36	7-20-'37	7-27-'36	7-31-'37	8-4-'36	8-11-'37	8-12-'36	8-18-'36
Nesting residents																		
1. Chestnut-backed Chickadee		6	8	4	7	10	6	6	8	10	6	10	12	12	18	16	24	0
2. Pileolated Warbler		6	8	1	8	8	6	5	5	5	3	3	0	2	1	0	0	0
3. Rusty Song Sparrow		8	5	5	4	9	6	10	6	8	4	3	3	4	3	4	3	2
4. Townsend's Warbler		8	6	5	6	5	2	0	6	0	0	0	0	0	0	0	0	0
5. Russet-backed Thrush		6	3	5	2	7	4	6	4	7	2	2	0	4	2	3	1	0
6. Western Flycatcher		11	4	4	3	7	6	6	5	3	3	2	0	2	2	2	2	1
7. Lutescent Warbler		8	3	2	1	6	4	1	4	0	2	3	0	0	0	0	0	0
8. Western Warbling Vireo		6	2	3	3	5	0	1	0	1	1	0	0	1	0	0	0	0
9. Little Flycatcher		3	3	2	4	5	4	2	4	2	2	1	0	1	0	0	0	0
10. Cassin's Vireo		3	6	4	3	2	2	2	1	0	0	0	0	0	0	0	0	0
11. California Yellow Warbler		2	2	2	2	2	2	2	0	2	0	2	0	0	0	0	0	0
12. Brown Creeper		2	0	0	0	1	2	0	2	0	3	0	4	2	6	2	0	3
13. Seattle Wren		2	2	1	1	1	3	2	3	3	2	3	5	5	1	1	1	0
14. Western Winter Wren		2	0	0	0	5	1	0	1	0	0	0	0	0	0	0	0	0
15. Oregon Towhee		2	0	2	0	2	1	0	0	1	0	0	0	0	0	0	0	0
16. Macgillivray's Warbler		1	2	1	2	2	2	2	2	2	3	2	0	2	1	0	0	0
17. Red-breasted Nuthatch		1	0	1	0	1	1	0	2	0	1	1	1	1	1	1	0	1
18. California Purple Finch		0	4	0	3	1	1	1	0	1	1	0	0	0	0	0	0	0
Totals		79	58	42	49	81	53	43	57	42	34	28	28	40	34	29	31	7



TEXT-FIGURE 1.—Fluctuation of the total resident bird population during the summers of 1936 and 1937.

Legend: Second Growth Area ———; Forest Area - - - -; Meadow Area -·-·-

CONCLUSIONS

The results of this study show that on San Juan Island a coniferous-forest area having a fairly close undergrowth and a few deciduous trees has the largest number of birds per acre. The density of population per unit acre of the forest is 4.87 birds; the meadow, 2.17 birds; and the second-growth, 2.18 birds. Observation shows that a purely coniferous forest devoid of undergrowth has a much smaller population than does a mixed forest.

The chart illustrating the fluctuation of the population during the summer is a picture more of seasonal behavior than of the fluctuation of the population. During the first part of June, the breeding season is at its height and the whole of the bird population is extremely active. Such activity makes it easy for the observer to see most of the birds present in an area. However, after mating activities have ceased there is considerably less activity and hence it becomes difficult for one to see even a majority of the birds present in any territory. For this reason the graph shows a drop in the population near the end of June. This apparent drop in population is, then, to be accounted for by a decrease in activity rather than by the disappearance of any of the birds from the territory.

About the first of July, the population increases considerably due to the addition of the young birds. If one were able to see all of the young that were produced by every pair of parent birds, the increase in population would undoubtedly be found much greater than is indicated by the graph. However, many natural factors make it almost impossible to see even the larger proportion of the young birds present. Beside the concealment of the young by the parents, it happens that many birds remove their progeny away from the nesting territory as soon as the young are able to move. The writer has observed this to be especially true of Townsend's and MacGillivray's Warblers, Cassin's Vireos, and Brewer's Blackbirds. Also, because certain birds nest earlier and leave a territory before others, the total population does not fluctuate in accordance with preconceived theories. While theoretically the population should increase greatly due to the addition of the young, in reality it is liable to many variations because of the differences in the habits and activities of individual species.

As the breeding season draws to a close near the end of July, most of the original inhabitants of an area travel widely and are generally found congregated where the feeding conditions are the most favorable. For this reason it becomes impossible to determine which birds are the original inhabitants of an area, and hence the counts made

during August do not accurately indicate the remains of the original breeding population. It is also interesting to note that many of the birds which have reared their young in the forest and the meadow are, for the most part, to be found during August in second-growth areas. This is especially true of the flycatchers, warblers, vireos, swallows, sparrows, and goldfinches.

As there has been very little work done on bird populations in the Northwest, and as this survey is too limited to serve as a basis, any comparisons between the density of bird life in this part of the country with that of other parts is not advisable.

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THE TYPE LOCALITIES OF SOME MEXICAN BIRDS OF THE GENERA *APHELOCOMA, CYANOCITTA,* AND *PEUCEDRAMUS*

BY PIERCE BRODKORB

IN the following paragraphs, type localities are established for the names of eight Mexican birds, referable to six species and subspecies. In some cases these names were proposed without definite locality, and for others the locality originally given has proved erroneous. Thanks are due the authorities of the Academy of Natural Sciences of Philadelphia and the United States National Museum for the use of material, and to A. J. van Rossem for information on certain types preserved in European museums. This study was aided by a grant from the Faculty Research Fund of the University of Michigan, made available through the Board of Governors of the Horace H. Rackham School of Graduate Studies.

Aphelocoma ultramarina ultramarina (Bonaparte)

Corvus ultramarinus BONAPARTE, Journ. Acad. Nat. Sci. Phila., 4 (2): 387, 1825 (Mexico; restricted to Temascaltepec by van Rossem, 1942).

Garrulus sordidus SWAINSON, Philos. Mag., (new ser.) 1 (5): 437, 1827 (Real del Monte, error).

Pica sieberii WAGLER, Syst. Avium, 1: [332], 1827 (Mexico).

Within two years this jay was given three separate names, but it is now apparent that they all refer to the same form. Van Rossem (Auk, 59, no. 4: 572, 1942) examined the type of Bonaparte's *C. ultramarinus* and found that it belongs to the large subspecies inhabiting the mountains surrounding the Valley of Mexico.

In the original description of *G. sordidus,* Swainson gave the locality as Real del Monte, in the state of Hidalgo. Since specimens from Hidalgo belong to the small subspecies separated by Nelson as *Aphelocoma sieberi potosina,* Hellmayr (Field Mus. Nat. Hist., Zool. Ser., 13, pt. 7: 56, 1934) employed the Swainsonian name for that subspecies. There seems, however, to be some error in Swainson's type locality, for that author himself later changed it to the tableland of Mexico [Zool. Illust., (2) 2: pl. 86 and text, 1832]. Moreover, van Rossem [Auk, 56 (1): 86, 1939] examined the type in the museum of Cambridge University and reported that it belongs to the large subspecies of the mountains of central Mexico, rather than to the small form of Hidalgo and San Luis Potosí.

Swainson mentioned that he had only one specimen. The data borne by the label of the type consist simply of the words "Bullock. Mexico." On pages 444–445 of Bullock's 'Six Months' Residence and Travels in Mexico' (London: John Murray, 1824) there are given some particulars incident to the collecting of this species. On July 20, 1823, Bullock and his companions were traveling along the road from Mexico to Veracruz, where they intended to embark for England. That afternoon, however, they met with an accident to their carriage and were forced to return to Río Frío for repairs, where, he says, "we were detained till the following day, which afforded me an opportunity of procuring several good birds." Several of these are enumerated, among them "two kinds of blue jays, all undescribed." The two jays are Swainson's *G. sordidus* and *G. coronatus.* In view of these circumstances, I restrict the type locality of *G. sordidus* to Río Frío, in the state of Mexico.

Pica sieberii of Wagler also was based exclusively upon specimens collected by Bullock. Therefore I restrict its type locality also to Río Frío.

Aphelocoma unicolor unicolor (Du Bus)

Cyanocorax unicolor DU BUS, Bull. Acad. Roy. Sci. Lettr. Beaux-arts Belg., 14 (2): 103, 1847 (le Mexique).

Aphelocoma unicolor coelestis RIDGWAY, Proc. Biol. Soc. Wash., 16: 108, 1903 (San Cristóbal, Chiapas).

In a recent paper on Du Bus's types, van Rossem (Wilson Bull., 54, no. 3: 212–213, 1942) reported that the type of *C. unicolor* belongs

to the Central American subspecies later described as *coelestis* by Ridgway, rather than to the bird of the Mexican plateau as had hitherto been thought. Although in the original description only the country of origin was given, Du Bus, in a later communication (Esquisses Ornithologiques, livr. 4: pl. 17 and text, 1848), mentioned the locality, Tabasco. Such a lowland area is of course impossible for a high-mountain species like this, and further doubt of its correctness is raised by the fact that Du Bus also attributed two other high mountain birds to Tabasco, namely, *Turdus rufitorques* and *Peucedramus olivaceus taeniatus*. Chiapas is the only Mexican state in which any of these three birds occur. All three are not uncommon in the pine forests of both the Sierra Madre and the Mesa Central of Chiapas. I restrict the type locality of *C. unicolor* to San Cristóbal, or as it is now called Ciudad de Las Casas, since this, the largest town in Chiapas, is the locality nearest Tabasco from which the species has been reported.

Aphelocoma unicolor concolor (Cassin)

Cyanocorax concolor CASSIN, Proc. Acad. Nat. Sci. Phila., 4: 26, 1848 (South America, error).

The transfer of the name *unicolor* Du Bus to the Central American subspecies necessitates the use of Cassin's name, *concolor*, for the bird of the Mexican plateau. Cassin's type, No. 3039 in the Academy of Natural Sciences of Philadelphia, was formerly mounted in the Rivoli Collection. It is a molting bird with the following measurements: wing (not fully grown), 163 mm.; tail, 132; culmen, 30.5; tarsus, 40; middle toe, 22. It agrees in color with specimens from the states of Mexico and Veracruz, in contrast to *A. u. guerrerensis* Nelson from Guerrero and *A. u. unicolor* from Guatemala. Since the supposed locality, 'South America,' is erroneous, I substitute the eastern part of the state of Mexico, as this appears to be the most likely place of origin.

Cyanocitta stelleri azteca Ridgway

Cyanocitta stelleri azteca RIDGWAY, Auk, 16 (3): 256, 1899. (Mountains near Mirador, Vera Cruz, error.)

The nomenclature and ranges of the two subspecies of *Cyanocitta* inhabiting the mountains of the states of Mexico and Veracruz, respectively, have been badly confused. Ridgway's type, No. 35156 in the United States National Museum, belongs to the black-crested, gray-backed subspecies that inhabits the mountains surrounding the Valley of Mexico. The original label has been removed. The two labels now on the specimen are the red type label and a label of Ridgway's personal collection. These labels are both strung on the

same thread, so they were undoubtedly attached about the time of the description of the subspecies, some thirty-five years after the bird was collected. The data from the labels read as follows: "E. Mexico (Mirador). June, 1864. C. Sartorius." In the catalog entry, made on February 6, 1865, the locality, Mirador, is not mentioned, but in its place are the words, "Pine lands. High." Since the type was received from Sartorius, who lived at the Hacienda Mirador, Ridgway assumed that it was collected near that place. Such, however, is apparently not the case, for other specimens from the vicinity of Mirador belong to the bluer subspecies whose range extends through the mountains of Veracruz and Hidalgo. That the type was not an accidental stray is suggested by the fact that another specimen resembling it was collected at the same time. It is probable that Sartorius collected the type somewhere along the road to Mexico City. I therefore substitute Río Frío, in the State of Mexico, as type locality, since this is the nearest place to Mirador where the present subspecies occurs. The supposed Veracruz records for *azteca* should be eliminated from the range of that form.

Cyanocitta stelleri coronata (Swainson)

Garrulus coronatus SWAINSON, Philos. Mag., new ser., 1 (5): 437, 1827 (various parts of the Tableland).

Cyanocitta galeata CABANIS, Mus. Hein., 1 (sig. 28): 222, 1851 (S. Fé de Bogotá ?, error).

Salvin and Godman, and Ridgway, applied the name *coronata* to the bluer subspecies of *Cyanocitta* that inhabits the eastern cordillera in the states of Hidalgo and Veracruz. Hellmayr, misled by the supposed type locality of Ridgway's *azteca*, reversed the ranges of *azteca* and *coronata*. The type of *G. coronatus* apparently is no longer in existence, since neither Salvin and Godman (Biol. Cent.-Amer., Aves, 1: 491, note, 1887) nor van Rossem (*in. litt.*) were able to find it in the Cambridge University Museum. The description is ambiguous but perhaps fits the bluer subspecies of Hidalgo and Veracruz better than the bird of the State of Mexico. As already stated above under *Aphelocoma u. ultramarina*, Bullock collected *Cyanocitta* at Río Frío, but the birds from that region are of the subspecies *azteca*. Swainson specifically mentions having specimens from various parts of the tableland, and Bullock's journeys took him into the ranges of both subspecies. In order to retain Swainson's name for the subspecies to which it has been applied by most authors, I restrict the type locality of *coronatus* to Real del Monte, in the state of Hidalgo, a well-known Bullockian locality.

The type locality of *C. galeata* is of course erroneous, as Cabanis himself suspected. The description leaves little doubt that it applies to the bluer subspecies of Hidalgo and Veracruz. I therefore substitute, as type locality, the vicinity of Jalapa, Veracruz, where many species in the Heine collection were taken.

Peucedramus olivaceus taeniatus (Du Bus)

Sylvia taeniata Du Bus, Bull. Acad. Roy. Sci. Lettr. Beaux-arts Belg., 14 (2): 104, 1847 (le Mexique).

Peucedramus olivaceus aurantiacus Ridgway, Proc. U. S. Nat. Mus., 18: 441, 1896 (Chilasco, Baja Verapaz, Guatemala).

For the reasons given under *Cyanocorax unicolor,* I restrict the type locality of *S. taeniata* to San Cristóbal, Chiapas.

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TWO NEW SUBSPECIES OF *CATHARUS AURANTIIROSTRIS*

BY JOHN T. ZIMMER

Amongst material from Colombia submitted for examination by Hermano Nicéforo Maria of Cúcuta and Bogotá, Colombia, were several specimens of a new form of *Catharus.* Study of these specimens required the examination of much additional material and resulted in the further discovery that another Colombian subspecies deserved recognition. The two new forms are described below.

Unless otherwise indicated, specimens are in the collection of the American Museum of Natural History, New York. Names of colors are capitalized when direct comparison has been made with Ridgway's 'Color Standards and Color Nomenclature.'

Catharus aurantiirostris inornatus, new subspecies

Type from San Gil, Santander, Colombia. No. 409864, American Museum of Natural History. Adult male collected in June, 1939, by Hermano Nicéforo Maria.

Diagnosis.—Somewhat similar to *C. a. phaeopleurus* of central and western Colombia but duller in coloration, upper parts nearly uniformly drab without decided gray on the head or warm brown on the lower back; anterior and lateral under parts paler gray. The light-colored under parts are similar to those of *aurantiirostris* and *birchalli* but the upper parts, although similarly uniform, are much duller and less rufescent.

Range.—Known only from San Gil.

DESCRIPTION OF TYPE.—Upper parts nearly uniform Hair Brown × Deep Grayish Olive; sides of head a little lighter; lores slightly whitish; chin and throat whitish with traces of inconspicuous shaft markings; sides and flanks Light Neutral Gray; breast somewhat paler; belly and under tail-coverts white. Wings and tail dark brown with exposed margins dull Olive Brown × Hair Brown. Bill and feet (in dried skin) pale yellow. Wing, 76 mm.; tail, 62.25; exposed culmen, 14; culmen from base, 18.8; tarsus, 31.1.

REMARKS.—Two additional males from the same locality are like the type.

The existence of this interesting new subspecies, combining to some extent the characters of the formerly-separated *aurantiirostris* and *griseiceps* groups, offers important evidence in support of the specific union of these two groups. In fact, if the two groups are kept as separate species, we are presented with discontinuous distribution in which certain members of the two groups alternately replace each other in a confusing manner. Costa Rica has one dark-capped and two brown-capped forms; Panamá, two with dusky caps; Colombia, one dark-capped and two brown-capped forms (one described below) and the present subspecies, *inornatus,* that is intermediate in this respect. There is no overlap in the ranges of any of these forms and I believe they are best considered as representatives of the same species. It has been recorded (Carriker, Ann. Car. Mus., 6: 746, 1910) that the songs of *griseiceps* and *"melpomene"* [= *costaricensis*] are greatly alike.

A worn specimen of *aurantiirostris* from Cotiza, Caracas, Venezuela, has the upper parts much duller in color than the rest of the series of that form and approaches *inornatus* to a perceptible degree although it is warmer in color on the upper surface and paler beneath, with more purely whitish throat.

On the other hand, a skin of *phaeopleurus* from Peque, Colombia, has a slight brownish tinge on the top of the head which tends to make the upper surface more uniformly colored than usual although much warmer in tone than *inornatus.* The under parts are decidedly darker as in other specimens of *phaeopleurus.*

Actually, it would be a problem to decide to which species to refer the present form in case it were considered desirable to recognize two species. In the matter of uniformity of dorsal coloration, affinity is with *aurantiirostris* but the absence of rufescence in any part of the plumage goes beyond the extreme limits of *phaeopleurus,* the dullest member of the *"griseiceps"* group.

There is considerable variation in certain specimens of the different forms of the species due to abrasion and bleaching of the plumage, but enough examples are at hand in this condition to determine that the characters of *inornatus* are not due to this change. The type is a little worn, but one of the paratypes, belonging to the Cúcuta Museum, is relatively fresh and as well-marked as the type.

Catharus aurantiirostris insignis, new subspecies

TYPE from near San Augustín, Huila, Colombia; altitude 5000 feet. No. 116959, American Museum of Natural History. Adult male collected April 14, 1912, by Leo E. Miller; original no. 2446.

DIAGNOSIS.—Intermediate between *C. a. costaricensis* and *C. a. aurantiirostris,* having the back and wings as dull as in *aurantiirostris* but the lateral and under parts as dark as in *costaricensis.*

RANGE.—Region of the upper Magdalena River in Colombia; doubtfully, also, somewhere in the "Bogotá" region.

DESCRIPTION OF TYPE.—Back a little warmer than Dresden Brown; top of head about the same; upper tail-coverts a little warmer and brighter. Chin and throat dull whitish on margins of the feathers but with broad shaft-streaks of dull grayish occupying the whole tips of the feathers; sides and flanks Neutral Gray, faintly tinged with Mouse Gray; middle of breast a little lighter; upper belly with some gray shading, passing into pure white on the lower belly and under tail-coverts. Wings dark brown, with exposed surface of closed wing about like the back, not rufescent; tail warmer in tone—Dresden Brown × Cinnamon Brown. Lores only slightly grayer than the top of the head; auriculars dark Hair Brown. Bill and feet (in dried skin) yellowish. Wing, 79 mm.; tail, 61.5; exposed culmen, 14; culmen from base, 19; tarsus, 32.

REMARKS.—A female from the type locality is exactly like the type in coloration but has somewhat shorter wings and tail—77 and 58 mm., respectively. A male from Andalucia is not appreciably different although the throat is somewhat more extensively whitish, as nearly as can be determined owing to the poor condition of parts of the plumage.

A "Bogotá-skin" is much more rufescent on the upper parts than the other three birds and is doubtfully assigned to this form because of the heavy shading on the lateral under parts which distinguishes it from *aurantiirostris.* Hellmayr (Field Mus. Nat. Hist., Zool. Ser., 13, pt. 7: 474, footnote 1, 1934) comments on a "Bogotá-skin" in the British Museum that also is unusually rufous-backed. It seems highly probable, therefore, that there is another form still to be recognized from somewhere adjacent to Bogotá—possibly on the eastern

side of the Eastern Andes, but its description may well await the discovery of its actual range. The bird in hand is much too dark to be referred to *birchalli* and too dark and rufous to belong in *aurantiirostris*. The back is Sudan Brown × Brussels Brown, with the top of the head warmer and darker—between Brussels Brown and Argus Brown. A strong, dark area at the base of the maxilla is not shown by the three other skins of *insignis*.

In the series of *costaricensis* at hand is a specimen from San José that is as rufous above as well-marked examples of *melpomene* but with the bright outer margins of the wing that distinguish *costaricensis* from that form. It is possible, therefore, that the Bogotá specimens mentioned above are similar individual variants of *insignis*, although it is curious that both of them presumably are from the same general region and are the only recorded "Bogotá-skins" of the species.

I have no topotypes of *"sierrae,"* described from the Santa Marta region by Hellmayr but later synonymized by him with *aurantiirostris*. If it exists as a separate form it would be distinguishable from *aurantiirostris* by even stronger rufescence on the upper parts, a character that Hellmayr in his later examination found to be inconstant. However, Mr. William A. Phelps writes me that two birds from the Perijá region of Venezuela and two from the state of Falcón are more rufescent than birds from Caracas and vicinity, with which specimens from the states of Lara and Táchira are in agreement in color. It is possible, therefore, that good series may show that *sierrae* is entitled to recognition with a range across extreme northwestern Venezuela to Santa Marta while *aurantiirostris* goes no farther than the state of Lara before swinging southwestward around the Gulf of Maracaibo. Strangely enough, there are no records from the Mérida region where some form of the species, probably *aurantiirostris*, should occur.

Specimens Examined

C. a. melpomene.—

Mexico:

(Jalapa, City of Mexico, Oaxaca or Orizaba, "Real arriba," and "Mexico"), 4 ♂, 5 ♀, 3 (?).

C. a. clarus.—

Mexico:

(Los Masos, Zapotlan, Mascota, La Laja, Volcán de Nieve, Guadalajara, Colima, Volcán Colima, Sierra de Atica, and Cuernavaca), 8 ♂, 2 ♀.

C. a. bangsi.—

Honduras:

Rancho Quemado, 1 ♂.

GUATEMALA:

(Nebaj, Finca Concepción, Panajachel, and "Guatemala"), 2 ♂, 1 ♀, 1 (?).

C. a. costaricensis.—

COSTA RICA:

(Agua Caliente, San Jerónimo, San José, Cartago, San Pedro, Navarrito, and Monte Redondo), 14 ♂, 5 ♀, 3 (?).

NICARAGUA:

(Matagalpa, San Rafael del Norte, Ocotal, and between San Rafael del Norte and Jinotega), 7 ♂, 4 ♀, 2 (?).

C. a. russatus.—

COSTA RICA:

Buenos Aires, 1 ♂;
Boruca, 1 ♂.

PANAMÁ:

Boquete, 4 ♂, 3 ♀, 2 (?);
El Banco, 1 ♂, 1 ♀.

C. a. griseiceps.—

PANAMÁ:

Veraguas, Santa Fé, 4 ♂, 2 (?♂), 1 ♀;
Chitrá, 3 ♂, 2 (?♂), 2 ♀;
Chiriquí, Cerro Flores, 4 ♂, 1 (?♂), 4 ♀;
Cebaco Is., 1 ♂;
Afuera Is., 1 ♀.

C. a. phaeopleurus.—

COLOMBIA:

(La Sierra, east of Palmira, Popayán, Peque, and Mari López), 6 ♂, 3 ♀.

C. a. insignis.—

COLOMBIA:

Near San Augustín, 1 ♂ (type), 1 ♀;
Andalucia, 1 ♂;
(?) "Bogotá," 1 (?).

C. a. inornatus.—

COLOMBIA:

San Gil, 1 ♂ (type), 2 ♂[1].

C. a. aurantiirostris.—

VENEZUELA:

Cotiza, Caracas, 4 ♂, 1 ♀.

C. a. birchalli.—

VENEZUELA:

(Andes of Cumaná, Quebrada Seca, La Tigrera, San Antonio, and Guácharo), 2 ♂, 2 ♀, 5 (?).

TRINIDAD:

(Aripo and Cave Mountain), 6 ♂, 2 ♀.

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[1] Specimens in Cúcuta Museum, Colombia.

STATUS OF CASSIN'S SPARROW IN ARIZONA

BY ALLAN R. PHILLIPS

As long ago as May, 1940, the writer became aware that current ideas concerning the status of the Cassin's Sparrow (*Aimophila cassini*) in the western part of its range were in need of revision. For three years, however, publication of these findings was withheld while further data were in prospect. Since it now appears unlikely that additional light will be thrown on the problem in the near future, I wish to call attention at this time to a situation which appears to be unique among North American birds.

This sparrow first attracted the author's attention on July 19, 1939. On that date, with his friends Gale Monson and F. W. Loetscher, Jr., he visited a locality near Tucson, Arizona, where he had previously discovered surviving colonies of Rufous-winged Sparrows (*Aimophila carpalis*). He hoped to find a nest of the latter species while introducing it to his friends, who had never seen a Rufous-winged Sparrow before July, 1939. While driving along the road and visiting the Rufous-winged Sparrow colonies, the party saw about twenty-five Cassin's Sparrows, most of them males singing the hauntingly sweet song of this otherwise obscure sparrow. Under other circumstances, no particular attention might have been paid to them; ever since the days of Henshaw, in the early 1870's, it has been well known that the Cassin's Sparrow is often abundant in the grasslands of southeastern Arizona in late summer. Indeed, Loetscher and I had seen and taken these sparrows the day before at Sahuarita (south of Tucson) and on the Santa Rita Range Reserve without suspecting that anything was amiss. But on July 19 it was clear to me that there was something peculiar about these birds. Here they were in numbers, singing freely, and the males evidently in breeding condition, with their testes greatly enlarged; yet hardly a month before, and with no period intervening when our sparrows were supposed to be migrating, on June 16, 1939, I had visited these self-same spots without hearing or seeing a single Cassin's Sparrow!

My next opportunity to visit these localities came in late August, a month later. The Cassin's Sparrows were still common on August 21 and 22; there were still quite a number of them, giving their flight song, on August 24 and 28; there were a few on September 1 and 6, but in September I heard little singing. By mid-September, what little singing there was was reduced to mere fragments of the full song. My last visit at this period was on September 12, when Lee W. Arnold and I saw only two Cassin's Sparrows.

On August 22, I was lucky enough to spy a Cassin's Sparrow sitting in the edge of a bush with a straw in its bill. Knowing that no authentic nest of this sparrow had ever been reported from Arizona, I instantly 'froze.' The bird soon flew out into the adjacent grass. I waited a bit and, when it did not reappear, I ran to the spot where it had disappeared. I saw nothing at first, tramped about a bit, and was getting discouraged, when suddenly the bird flushed at very close range. There, in a tussock of grass, was a partly built nest. I withdrew immediately in order to avoid any unnecessary disturbance, and on subsequent visits never stayed more than an instant. By August 28, however, the nest appeared deserted, and finally on September 6 I collected it for the record.

During the winter of 1938–1939, I had seen only one or two Cassin's Sparrows in these places. The rains of August, 1939, however, had produced a good crop of grass, and the following winter about eleven of the sparrows were seen in January. On March 30, 1940, there was some singing, and I now looked forward to finding eggs in the summer of 1940. It seemed to me that the bird's secret was that it waited for the summer rains before migrating and nesting. Other ornithologists, I believed, had not waited long enough to find its nest in Arizona. Its status at Tucson, on the northwestern edge of its range, apparently fluctuated considerably. Surely, I thought, the summer of 1940 will produce plenty of nests and eggs to dispel all doubts, after such a favorable winter.

On May 5, 1940, I took my mother and stepfather to these spots so that they might hear the lovely song of the Cassin's Sparrow. By then, I was sure, the birds would be singing pretty freely. We tramped over nearly the entire area, but *not a single Cassin's Sparrow did we see or hear!*

Where had the birds gone? On my return home, I went through my files and realized for the first time that there was *not a single Arizona record for late May or early June* that was beyond question. With this in mind, I was not so greatly surprised on May 19, when Dr. George Miksch Sutton, Gale Monson, and I failed again to find any Cassin's Sparrows. On June 30, Monson and I again visited the usual localities and found none; and I found none on July 9. On July 21, 1940, I found one, and another on August 6, but they were not nearly so common as they had been the preceding summer.

The latest spring record for this species in Arizona, to my recollection, is May 14, 1903, at the foot of the Huachuca Mountains (Swarth, Pac. Coast Avif., 4: 43, 1904). In fall migration, Gale Mon-

son saw two singing males, and took a specimen, on the Babocomari River near Elgin, Santa Cruz County, June 29, 1939, and he found them rather common near Lowell, east of Bisbee, Cochise County, July 6 and 9, 1939; he took two, one of which was preserved, on July 9. While there may be one or two records for the period between these four dates, I am not in a position to investigate their validity at the present time.

The literature of the Cassin's Sparrow in the western part of its range has been somewhat confused. Two authors (Scott, Auk, 4: 203, 1887, and Bailey, Pac. Coast Avif., 15: 41, 1923) have accidentally omitted the species from their lists. Swarth, after first reporting certain dubious nests, finally summed up its status in Arizona in summer by saying: "I know of no instance of its having been found actually breeding, though taken throughout the summer" (Pac. Coast Avif., 10: 57, 1914), a statement that approaches the truth. The most recent summary, however, is far from the facts: "Breeds . . . from southeastern Nevada . . . south to northern Sonora . . ." ('A.O.U. Check-List N. Am. Bds.,' 4th ed.: 343, 1931). I know of no record at any season whatever for western Colorado or Utah, and only one casual record for Nevada; nor are there any records for northern or western Arizona. The species doubtless *does* breed at least as far west as the Pecos Valley, New Mexico (see Ligon *in* Bailey, 'Bds. N. Mex.': 731, 1928); and, according to the files of the Fish and Wildlife Service, a parent and four eggs were taken by R. L. More in the northeastern corner of San Miguel County, fifteen miles southwest of Mosquero, New Mexico, on July 3, 1933. If it *breeds* anywhere farther west, the fact has not yet been established.

In Arizona, the Cassin's Sparrow is an abundant fall transient from mid-July to early September, and an irregularly (?) fairly common winter resident. Whether there is a return flight in spring is difficult to ascertain, since an increase in the number of records at this time may reflect merely a change from its skulking habits of the winter to the spring song period. The great majority of the July and August birds seem to be adults, and I have seen no juveniles taken in Arizona that were not full-grown. Neither am I aware that authentic eggs have been taken in Arizona. There is thus good reason to suspect that the species *does not breed in Arizona*, despite its actions, enlarged testes, and even partial nest-building! Here, then, are fascinating problems for the field ornithologist in the Southwest.

While there are small colonies of Cassin's Sparrows far north of the latitude of southern Arizona, the abundance of the species in

Arizona and the fact that the principal breeding areas are in Texas convince me that this is, in the main, an east-to-west migration. Perhaps banding may ultimately prove that for some individuals it is actually a southeast-to-northwest migration.

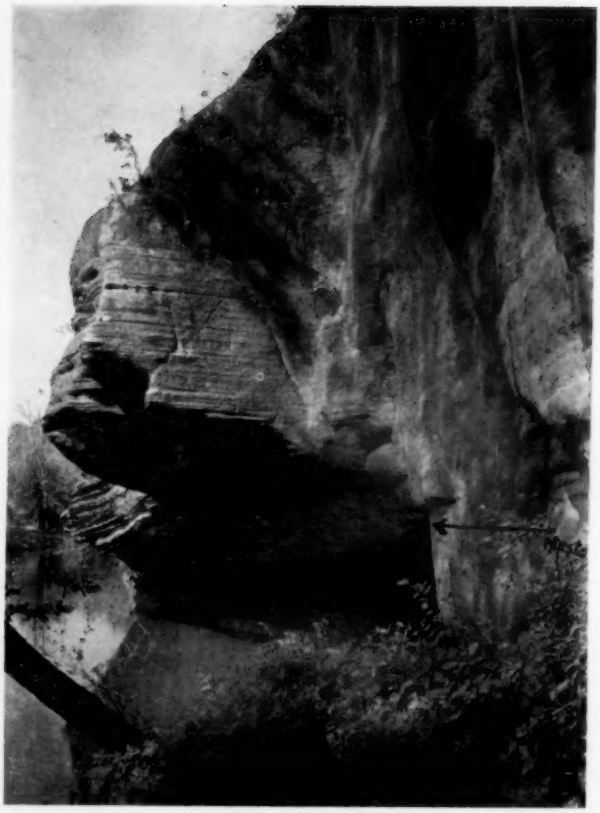
An interesting and perhaps significant correlation with the east-to-west migration of the Cassin's Sparrow may be found in rainfall data. On the southern Great Plains, where the species breeds in May and June, the month of July is often dry, while the spring months are more moist. In Arizona, on the other hand, the months of April, May, and June are very dry, and the summer rainy season usually begins from late June to mid-July. The showers that usually occur in July and August bring up numbers of plants that rapidly mature seeds. Plant and animal life in Arizona reaches its peak in August.

During the course of this investigation, I have received much assistance. I am especially indebted to Mr. Gale Monson, who has ever imparted freely his wide experience with southern Arizona birds. For the use of both files and collections, I am indebted to the authorities of the Fish and Wildlife Service, U. S. Dept. of the Interior. I have examined the specimens in the collections of the U. S. National Museum, American Museum of Natural History, University of Arizona, and California Academy of Sciences, and in the private collections of Gale Monson, Lyndon L. Hargrave, and Dr. L. C. Sanford. Mr. and Mrs. J. Southgate Y. Hoyt furnished data on the specimens in the Museum of Comparative Zoölogy at Harvard University, and Mr. J. Frank Cassel on those in The Academy of Natural Sciences of Philadelphia. I wish to express my gratitude to these friends and to the authorities of these institutions, as well as to the many others who have helped to a lesser extent.

SUMMARY

The Cassin's Sparrow appears in Arizona in mid-July as an abundant fall transient, having migrated west from the southern Great Plains. Most of the birds are adults. They are in full song, with testes greatly enlarged, and may go so far as to build nests, but so far as is known they do not complete their nests nor lay any eggs. They decrease sharply in numbers at the beginning of September, but some remain through the winter and leave in early May. In spite of their actions, they apparently do not breed west of eastern New Mexico, and they are casual or unknown north and west of southeastern Arizona.

Museum of Northern Arizona
Flagstaff, Arizona



NORTHERN CLIFF SWALLOWS.—(Upper figure), NESTING SITE ALONG THE WHITE RIVER NEAR FAYETTEVILLE, ARKANSAS. (Lower figure), NESTLINGS INFESTED BY TICKS.

TICKS AND OTHER PARASITES ATTACKING NORTHERN CLIFF SWALLOWS

BY W. J. BAERG

Plate 17

A colony of Northern Cliff Swallows, *Petrochelidon albifrons albifrons* (Raf.), situated accessibly on a low projecting cliff, has offered opportunities for observing various parasites. The swallows have been nesting quite regularly at this cliff along the White River, about 25 miles southeast of Fayetteville, Arkansas. The shelf-like projection of the cliff is low enough to render certain observations relatively easy. Some of the nests are no more than six or eight feet above the ground. The number of nests has been estimated at 125–200.

During the twelve years that this swallow colony has been visited, once or twice annually, the birds have shown considerable determination to build on the low shelf. Only once, when high water presumably washed away partly finished nests, did the swallows fail to build nests and rear their young at this site. Even this year, 1943, when the shelf was under water several times late in May, the swallows merely delayed nest construction two or three weeks until the water subsided and they could again build low. Having watched them carry mud from the clay bank, only six to twelve feet below, I am inclined to think that this colony of Cliff Swallows prefers to avoid unnecessary efforts. Other colonies of Cliff Swallows observed along the White River nest 75–100 feet up and commonly some distance from water.

It seems that the low nesting site is peculiarly favorable for the various external parasites attacking nestling birds. The most important parasite appears to be the tick, *Ixodes baergi* Cooley. Engorged adult female ticks are readily observed when they are leaving the nests and seek shelter in cracks and crevices, presumably for oviposition. At this time, a number of males are still clinging to the ventral side of the females. Apparently, mating takes place when the females have left the host and are on the way to the oviposition site.

The females deposit the eggs in masses, composed on an average of 350 eggs. Incubation has not been observed. However, the young ticks appear to be on hand when the swallows return late in April. Whether they begin feeding on the incubating swallows, or wait until the nestlings hatch, is not known; so far no ticks have been found attached to adult swallows.

It seems that the ticks complete their development as larvae and

nymphs, and go into adult stage while the young swallows are going through the nestling stage. This seems rather rapid development; however, the nature of the site is such that other hosts for the ticks seem practically excluded. No young ticks have been found on the nestling swallows.

Since 1941, when the ticks were first observed, they have substantially increased in numbers. When the colony was first visited this year, July 6, 1943, the engorged ticks were already very numerous on the outside of nests and the surface of the lower portion of the cliff. Even then, nestling swallows had as many as 18 ticks clustered on the chin, forehead, and eyelids. One tick was observed on the bend of the wing. Presumably, the infestation, if observed a few days earlier, would have been substantially heavier.

In spite of the large number of ticks attacking nestlings, these did not appear to have suffered seriously. On July 10, when the colony was visited again, the nestlings were about ready to fly, so that the nests had to be removed with care, lest the young escape by flight. At this time the nestlings averaged about one tick each.

Pulling the ticks off did not result in any bleeding. Rather superficial examination of the nestlings' eyes did not show any such serious injury as has been observed by Thomas (2) and Worth (3).

Other Parasites.—In addition to ticks, the nestling swallows have to contend with rather large numbers of bugs, *Oeciacus vicarius* Horvath of the family Cimicidae. The bugs, in nymphal and adult stages, may be observed by the hundreds when most of the nests have been vacated and all but a few families have departed. At such a time the few occupied nests are fairly seething with bugs.

Fleas, *Ceratophyllus celsus* Jord., in larval and adult stages, are fairly numerous in the lining and debris of the nests. Finally there are also bird lice, *Myrsidea dissimilis* (Kell.) on the birds and in the deposit in the nests.

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THE RELATION OF SELENIUM TO WESTERN DUCK SICKNESS

BY H. W. LAKIN, E. R. QUORTRUP AND NEIL HOTCHKISS

IN 1936 Twomey and Twomey reported that 20–50 parts per million of selenium as sodium selenite in the drinking water produced poisoning in ducks in which the syndrome was identical with that produced by *Clostridium botulinum* type C, which had been considered the principal causative agent in western duck sickness (Kalmbach and Gunderson, 1934). In a more recent paper, Twomey, Twomey and Williams (1939) reported the analyses of a number of duck livers collected at various points near Great Salt Lake where the sickness is prevalent. These analyses show the presence of 7–148 p. p. m. of selenium, based on the oven-dried weight of the livers. In contrast, no selenium was found in duck livers obtained in Pennsylvania, where sickness has not been reported. As a result of these findings, a thorough investigation of the significance of selenium in outbreaks of western duck sickness was undertaken in the summer of 1940.

In July and August, 1940, the authors made a reconnaissance survey of areas in which losses from western duck sickness were known to occur. The areas examined were on the Des Lacs, Long Lake, and Upper Souris National Wildlife Refuges in North Dakota; Bowdoin and Medicine Lake Refuges, Montana; Waubay Refuge, South Dakota; Crescent Lake Refuge, Nebraska; Bear River Refuge, Utah; Malheur Refuge and Copco Marsh on Upper Klamath Lake, Oregon; and Tule Lake Refuge, California.

The livers and gizzards of both sick and healthy waterfowl (28 Pintails, 12 Mallards, 5 Shovellers, 2 Gadwalls, 1 Baldpate, 1 Blue-winged Teal, 1 Green-winged Teal; 1 Redhead, 1 Canada Goose, and 2 Coots; gizzards only of an additional 4 Mallards, 3 Pintails, and 2 Baldpates) were collected, preserved in formalin, and analyzed for selenium. Samples of mud were collected in each area and examined for selenium. A few samples of vegetation and one sample of Cladocera were also examined for selenium.

The methods of analysis used for determining the selenium content of soils and vegetation are those of Robinson, *et al* (1934) for soils and of Williams and Lakin (1935) for plants. They are the tentative methods given in 'Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists' (1940). In determining the selenium content of livers and gizzards, 10–15 gms. of the material were cut into small cubes about 0.5 cm. on the side and covered with a mixture of nitric and sulfuric acids and treated by

the procedure described by Williams and Lakin. This essentially consists of distilling the selenium as selenium tetrabromide from a bromine-hydrobromic acid mixture, collecting in water, and reducing to selenium with hydroxylamine hydrochloride. The analyses are given on the basis of the weight of the preserved material, after the excess formalin has been drained off on an absorbent paper.

Analytical Data and Observations

The selenium content of the muds, taken from lakes in which botulism occurred, ranged from less than 0.1 p. p. m. to 2.4 p. p. m. It was more than 1 p. p. m. in only one instance, while 65 of the 79 samples of mud examined contained 0.5 p. p. m. or less.

On Lostwood National Wildlife Refuge, Burke County, North Dakota, where no outbreaks of western duck sickness have been reported, a sample of mud was found to contain 0.6 p. p. m. of selenium. On Des Lacs Refuge, Ward County, North Dakota, only a few miles east of Lostwood, the selenium situation appears to be essentially identical, but severe outbreaks of western duck sickness are common.

A composite sample of water collected at Tule Lake Refuge, California, contained seven parts per billion of selenium. Byers, *et al* (1938: 67–68) report the selenium content of a number of samples of water from areas in which western duck sickness occurs (Lacreek National Wildlife Refuge, South Dakota; Bamforth Lake Refuge, Wyoming; and Gimlet Lake on Crescent Lake Refuge, Nebraska). None of these samples contained in excess of one part per billion. The minimum amount of selenium as sodium selenite in the drinking water that Twomey and Twomey (1936) used to produce the syndrome identical with that produced by *Clostridium botulinum* type C was 300- to 2000-fold that found in natural waters where the sickness occurs.

The livers of 54 waterfowl were examined for selenium. Seven of these were normal healthy birds shot on the wing at or near the Bear River Refuge in Utah. Forty-four birds died of botulism (seven not conclusively). Of the remaining three birds, metallic poisoning was indicated in two and aspergillosis in the third.

Selenium was present in detectable quantities in the livers of all birds examined from areas in Montana, North Dakota, and Nebraska. In only five of the 44 birds which died of botulism was there no detectable amount of selenium in 10 gms. of the liver. One contained 3 p. p. m. of selenium, one had 2 p. p. m., two had 1.4 p. p. m., and the remaining 35 livers had 1 p. p. m. or less of selenium. Of the livers of the healthy birds and of those which died from causes other than

botulism, four livers contained no detectable amount of selenium, two contained 0.2 p. m. m., two contained 1 p. p. m., and two 3 p. p. m.

At Bear River Refuge, Utah, the livers of thirteen birds which died of botulism and of seven healthy birds were examined for selenium. While four of the livers of the healthy birds and three of the poisoned birds gave no detectable amounts of selenium, both sets of samples varied over the same range in selenium content, with a maximum of 3 p. p. m. in the livers of both healthy and poisoned birds.

The gizzards of 63 waterfowl were examined for selenium. They varied in selenium content from no detectable amount in 10 gms. of the preserved tissue to 1.4 p. p. m. There is no apparent correlation between the selenium content of the liver of a bird and that of the gizzard. There is also no evidence in these data of particularly high selenium content in the diet of the birds.

The amount of selenium found in the mud samples is so small in every area visited that only the abnormal absorbers of selenium (such as the indicator plants *Astragalus pectinatus, A. bisulcatus, A. racemosus,* etc.) would be toxic. *Astragalus pectinatus* and *A. bisulcatus* were observed growing near the lakes on the Des Lacs and Lostwood Refuges in North Dakota; *A. pectinatus* was found on Medicine Lake and Bowdoin Refuges in Montana; and *A. racemosus* was observed along a lake shore at Waubay Refuge in South Dakota. At no other points visited was there any evidence of the occurrence of the high absorbers of selenium. A sample of sago pondweed (*Potamogeton pectinatus*) from Bear River Refuge and a sample of algae from Tule Lake Refuge were both found to contain less than 0.1 p. p. m. of selenium. Beath, *et al* (1939) report the analyses of eighteen samples of marsh vegetation collected during the seed stage of growth by staff members of the U. S. Biological Survey. Only four of these samples contained selenium. The highest value was 1.5 p. p. m. in *Potamogeton pectinatus.* This is less than one-half the minimum amount of 4 p. p. m. of selenium necessary in the total diet to produce evidence of injury to white rats (Munsell, *et al.,* 1936).

There are no available data on the amounts of selenium that occur in the livers of healthy waterfowl exposed to low concentrations of selenium in their food. Moxon and Poley (1938) fed selenium to poultry in various concentrations from 1.25 to 10 p. p. m. in the total diet for a period of five to six weeks and then killed the hens and examined the carcasses for selenium. The livers of the seventeen birds examined contained from 25 p. p. m. to no detectable amount of

selenium on the dry basis. Assuming the livers to be 75 per cent moisture, they contained 6 p. p. m. or less of selenium on the wet basis. There was no close correlation between the amount of selenium in the diet and the amount in the liver in individual birds, although the average selenium content of the livers of four hens on a diet containing 1.25 p. p. m. of selenium was about half that of four birds on a diet containing 5 p. p. m. These birds were not killed by selenium poisoning and were presumably in good enough condition to be acceptable on the market for food purposes. The high value of 3 p. p. m. in the present investigation is only half the maximum content of chicken livers reported by Moxon and Poley.

Selenium poisoning in poultry is most apparent in chicks hatched from eggs laid by selenized hens (Moxon, 1937). Many of the eggs fail to hatch because of the high incidence of monstrosities (deformities). The most common deformities are: missing or short upper beaks, missing eyes, edema of the head and neck, and wiry down. The chicks which do hatch are usually weak and have a wiry down. Francke, *et al* (1936) demonstrated that these deformities were caused by selenium from the fact that injection of selenium salts into the air cells of hens' eggs before incubation produced monsters similar to those occurring naturally. The authors were unable to obtain any reports of monstrosities in young waterfowl in the areas examined.

In the voluminous publications concerned with the alkali disease in South Dakota there is no reference to limberneck in poultry, nor is there any report of its having developed in experiments conducted with poultry on highly seleniferous diets. Since the toxin of *Clostridium botulinum* type C causes limberneck in poultry (Kalmbach and Gunderson, 1934), one would expect limberneck to be particularly common in the seleniferous area of South Dakota if selenium regularly produced symptoms like those produced by *Clostridium botulinum* type C.

SUMMARY

The distribution of selenium in the soils in the areas visited appears to be general; but amounts found range from less than 0.1 p. p. m. to only 2.4 p. p. m. This is so little that only those plants which absorb large quantities of selenium could be expected to be toxic. There is no close correlation between the amount of selenium in the plants and the selenium content of the soil on which they were grown. Toxic quantities of selenium in plants were observed in the areas affected by western duck sickness only at Bowdoin, Medicine Lake, Des Lacs, and Waubay Refuges. In all of these cases selenium indicator plants (*Astragalus* spp.) were the offenders.

The minimum amount of selenium as sodium selenite in the drinking water that Twomey and Twomey (1936) used to produce the syndrome identical with that produced by *Clostridium botulinum* type C was 300- to 2000-fold that found in natural waters where the sickness occurs. These data indicate no probability that the disease in question is due to selenium in the water.

Selenium was present in detectable quantities in all but nine of the fifty-four livers of waterfowl examined. The selenium content of the livers of birds which died of botulism varied over the same range as healthy birds shot in flight and those dead from other causes. There is no available information on the amount of selenium that one may expect in the livers of healthy waterfowl exposed to low concentrations of selenium in their food other than those data presented here and by Twomey, Twomey and Williams (1939). However, Moxon and Poley (1938) report approximately twice as much selenium in the livers of apparently healthy hens as was found in any of the 54 livers herein reported upon.

The 63 gizzards examined were of low selenium content and gave no evidence of recent ingestion of particularly toxic food due to selenium.

The marsh vegetation which has been examined in affected areas has in all cases been too low in selenium to be toxic.

No deformities of young waterfowl in the affected areas have been reported. Since deformities in the young are one of the primary symptoms of selenium poisoning in poultry, it is of interest that this symptom is not found in western duck sickness. Further, while limberneck is the same disease in chickens as the western duck sickness in waterfowl, no reports of limberneck symptoms are given in the descriptions of selenized chickens.

Selenium, then, does not appear to be a factor in western duck sickness. Selenium has been shown to be widespread in soils, plants, and even in the dust of cities (Lakin and Byers, 1941), as well as a common constituent of human urine (Williams *et al*, 1941). It is not surprising, therefore, that ducks in areas of mildly seleniferous soils should have selenium in their livers; but that the small amounts of selenium in their diet and drinking water should cause the tremendous losses of waterfowl experienced in some of these areas is most unlikely.

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OCCURRENCE AND DISTRIBUTION OF THE TREMATODE, *COLLYRICLUM FABA* (BREMSER) IN BIRDS

BY D. S. FARNER AND B. B. MORGAN

THE trematode, *Collyriclum faba,* has been reported from two orders, thirteen families, 24 genera, and 26 species of birds. This fluke occurs in cysts in the skin, primarily around the vent. The purpose of this paper is to record a new host occurrence, give a brief review of the literature, and present a complete parasite-host list with its geographical distribution. It is hoped that this report may stimulate research and observations leading to the solution of the life cycle of *C. faba.*

Collyriclum faba, a trematode of the subclass Digenea, order Prosostomata, suborder Distomata and family Troglotrematidae, has been known for more than a century. It was originally described as *Monostoma faba* by Schmalz (1831) on the basis of descriptions and drawings made by S. Thom. von Soemmerring and Guilielmi Soemmerring from specimens collected by Bremser from *Parus major* near Vienna, Austria; descriptions and drawings sent in by Bremser from *Phylloscopus sibilatrix* collected in June, 1823, near Vienna, Austria; and from descriptions by Prof. Fischer, Vienna, of specimens collected from *Motacilla cinerea.* In his letter to Schmalz in 1823, Bremser refers to the parasite as *Monostoma geminum.* It appears that Schmalz based his descriptions on the material submitted to him from these three sources; named it *M. faba,* and gave credit to Bremser, apparently because he was the first to observe the parasite.

Miescher (1838) described a trematode, *M. bijugum,* which Seibold (1839) recognized to be synonymous with *M. faba.* A good account of this may be found in the treatise of Dujardin (1845). Rolando (1841) created the genus *Globularia* as the genus *Monostoma* was becoming unwieldy. Cobbold (1860) placed *faba* in the genus *Wedlia.* Odhner (1907) excluded the species *faba* from *Wedlia.* Kossack (1911) agreed with Rolando in proposing a new genus for *faba* but pointed out that the name *Globularia* was already in use for a genus of mollusks. Therefore, Kossack proposed the genus *Collyriclum* with *faba* as the type and only species in this genus. Ward (1917) created a new species, *C. colei,* which was shown to be synonymous with *C. faba* by Chapin (1926). For detailed descriptions of the parasite, the papers of Jegen (1917), Ward (1917) and Tyzzer (1918) may be consulted.

On July 12, 1942, a juvenile female cowbird was trapped near Tomahawk, Wisconsin. This bird which was heavily parasitized with *C. faba* was one of a family of three cowbirds which was being raised

by a pair of song sparrows. Neither of the other cowbirds nor the foster parents were infected. All were trapped, inspected, banded, and released. The infected cowbird harbored approximately 54 cysts around the anus. Several of the cysts were small; each of these contained two immature flukes. A total of 28 mature flukes were recovered. The clumping of the cysts around the anus gave the appearance of a tumor-like growth. The cysts were from 3 to 6 mm. in diameter and protruded 6–10 mm. from the skin surface. Eggs were recovered from the cyst openings, cultured, and active miracidia were obtained. In the vicinity of the area in which this family was raised were three shallow ponds and a lake. Snails, *Planorbis* sp. and *Stagnicola emarginata* were collected from two of the ponds; none could be found in the third pond or in the lake. Examination of 246 snails did not reveal the presence of immature flukes (sporocysts, ceraria, or metacercaria).

On June 2, 1942, on the campus of the University of Wisconsin, a sick juvenile male robin was collected and taken to the laboratory for examination. The robin harbored 14 cysts near the anus containing 27 mature *C. faba*. *Collyriclum faba* from the cowbird is a new host record.

The life cycle of this parasite is not known. There is no confirmation for the suggestion of Jegen (1917) that the life cycle is direct. As most trematodes require an intermediate host, it is reasonable to assume that a snail host plays a rôle in its life cycle. Riley (1931) believes that the dragonfly nymph is the second intermediate host.

Cole (1911), Jegen (1917), Tyzzer (1918), Riley and Kernkamp (1924), and Riley (1931), who found large numbers of infected individuals, state that the parasite is confined almost exclusively to young birds. Our records also confirm this point. This may be due to a host-parasite relationship and, therefore, of no significance in the life-cycle. All dated records are for late spring and summer, from May to September. It is therefore probable that most birds become infected as young in the nest, from food carried by the parents.

The geographical distribution of *M. faba* is definitely limited to three regions: (1) *Central Europe,* including Switzerland, Austria, southern Germany, southeastern France, and northern Italy; (2) *Eastern United States,* including Maryland, New Jersey, and Massachusetts; (3) *North-central United States,* including Wisconsin, Michigan, and Minnesota. Every record falls into one of these three regions. One species, *Passer domesticus,* has been found infected in each of these three regions. There are no records west of the Great Plains in the United States.

Because of the rigidity of trematode life cycles of this group, it is safe to assume that the intermediate hosts, especially the second, of *C. faba* are invariable. This would then lead to the conclusion that infection in all 26 species of birds must occur by eating the same invertebrate intermediate hosts (possibly a dragonfly or Mayfly). In consideration of the variety of species in the host list it is obvious that any such item must be rare, sporadic, or accidental in many of the species of hosts. There may possibly be a relationship between the distribution of the intermediate host and the peculiar distribution of the records of the parasite.

In the host list, scientific names are according to Niethammer (1937) for European birds, and the fourth A.O.U. Check-List (1931) for American birds. Common names of European birds are in general those from Thorburn (1926–27); common names for American birds are from the fourth A.O.U. Check-List (1931). The taxonomic relationship of groups is that of Wetmore (1940).

PARASITE-HOST LIST OF *Collyriclum faba*

ORDER GALLIFORMES

Family PHASIANIDAE

Gallus gallus (Linnaeus), Domestic Fowl.—Riley and Kernkamp (1924): Minneapolis, Minnesota, June, 1922.

Family MELEAGRIDIDAE

Meleagris gallopavo Vieillot, Domestic Turkey.—Riley and Kernkamp (1924): Vining, Minnesota, June 29, 1923. Marcotel (1926): Romans, Drome Province, France (southeast).

ORDER PASSERIFORMES

Family CORVIDAE

Corvus brachyrhynchos Brehm, Crow.—McIntosh (1935): Douglas Lake, Michigan, June 28, 1928; July 14, 1928; July 18–26, 1929. Morgan and Waller (1941): Iowa, June, 1940. Riley (*from* Beaudette, 1940): Minnesota.

Cyanocitta cristata (Linnaeus), Blue Jay.—Hassell, (1908): Maryland. Riley (*from* Beaudette, 1940): Minnesota.

Garrulus glandarius (Linnaeus), European Jay.—Railliet (1898): collected by Laguesse at Fixin, Côte d'Or Province, France (east), September, 1897.

Family PARIDAE

Parus major Linnaeus, Great Titmouse.—Bremser (*in* Schmalz, 1831): Vienna, Austria, early summer, 1823.

Family SITTIDAE

Sitta carolinensis Latham, White-breasted Nuthatch.—McIntosh, (1935): Douglas Lake, Michigan, July 2, 1928.

Family TURDIDAE

Turdus migratorius Linnaeus, Robin.—Riley and Kernkamp (1924) [*Planesticus migratorius*]: St. Paul, Minnesota, 1919. Morgan (this paper): Madison, Wisconsin, June 2, 1942.

Ruticilla phoenicura (Linnaeus), European Redstart.—Jegen (1917): Basel, Switzerland.

Oenanthe oenanthe (Linnaeus), Wheatear.—Willemoes-Suhm (1873) [*Saxicola oenanthe*]: Genoa, Italy. Kossack (1911) [*Saxicola oenanthe*]: specimen in Munich Museum collected by Willemoes-Suhm, Genoa, Italy, Sept. 25, 1889.

Family SYLVIIDAE

Sylvia borin (Boddaert), Garden Warbler.—Kossack (1911) [*Sylvia simplex*]: specimen in Munich Museum, Germany.

Sylvia hortensis (Gmelin), Orphean Warbler.—Kossack (1911): Gruenewalde, Bavaria, Germany.

Phylloscopus sibilatrix (Bechstein), Wood Warbler.—Bremser (*in* Schmalz, 1831) [*Sylvia sibilatrix*]: Vienna, Austria, June, 1823.

Phylloscopus trochilus (Linnaeus), Willow Warbler.—Creplin (1839) [*Sylvia sibilatrix*]: southern Germany, June 8, 1831.

Family MUSCICAPIDAE

Muscicapa striata (Pallas), Spotted Flycatcher.—Jegen (1917) [*Muscicapa grisola*]: Basel, Switzerland.

Family MOTACILLIDAE

Motacilla cinerea Tunstall, Gray Wagtail.—Fischer (*in* Schmalz, 1831) [*Motacilla boarula*]: Vienna, Austria. Diesing (1860) [*Motacilla boarula*]: Vienna, Austria.

Family STURNIDAE

Sturnus vulgaris Linnaeus, Starling.—Rolando (1841): Italy.

Family PLOCEIDAE

Passer domesticus (Linnaeus), House Sparrow.—Miescher (1838) [*Fringilla domestica*]: Basel, Switzerland. Kossack (1911) [*F. domestica*]: Basel, Switzerland, June, 1849. Cole (1911): Madison, Wisconsin, June 15–July 25, 1910. Jegen (1917) [*F. domestica*]: Basel, Switzerland. Riley (1931): Ithaca, New York, 1914. Tyzzer (1918): Boston, Massachusetts, summers of 1917 and 1918. Riley (*from* Beaudette, 1940): Minnesota.

Family ICTERIDAE

Quiscalus quiscula (Linnaeus), Purple Grackle.—Riley (*from* Beaudette, 1940) [*Quiscalus quiscula aeneus*]: Waconia, Minnesota.

Agelaius phoeniceus (Linnaeus), Red-winged Blackbird.—Riley (*from* Beaudette 1940): Minnesota.

Molothrus ater (Boddaert), Cowbird.—Farner and Morgan (this paper): Tomahawk, Wisconsin, July 12, 1942.

Family FRINGILLIDAE

Carduelis spinus (Linnaeus), European Siskin.—Miescher (1838) [*Fringilla spinus*]: Basel, Switzerland.

Serinus canarius (Linnaeus), Canary.—Miescher (1838) [*Fringilla canariensis*]: Basel, Switzerland.

Emberiza cirlus Linnaeus, Cirl Bunting.—Parona, Italy, 1887.

Fringilla coelebs Linnaeus, Chaffinch.—Jegen (1917): Basel, Switzerland.

Carpodacus purpureus (Gmelin), Purple Finch.—Beaudette (1940): Demarest, Bergen County, New Jersey, May 2, 1939.

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BROOD HABITS AND GROWTH OF 'BLUE GROUSE'[1]

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THE 'blue grouse' (*Dendragapus fuliginosus* and *Dendragapus obscurus*), the West's premier game birds, inhabit mountain forests from Alaska to New Mexico. They are associated with the coniferous forests and have been called aptly the "coniferous counterpart of the Ruffed Grouse."

The principal work of this study was concentrated in the general area accessible from Conconully, Okanogan County, Washington, on

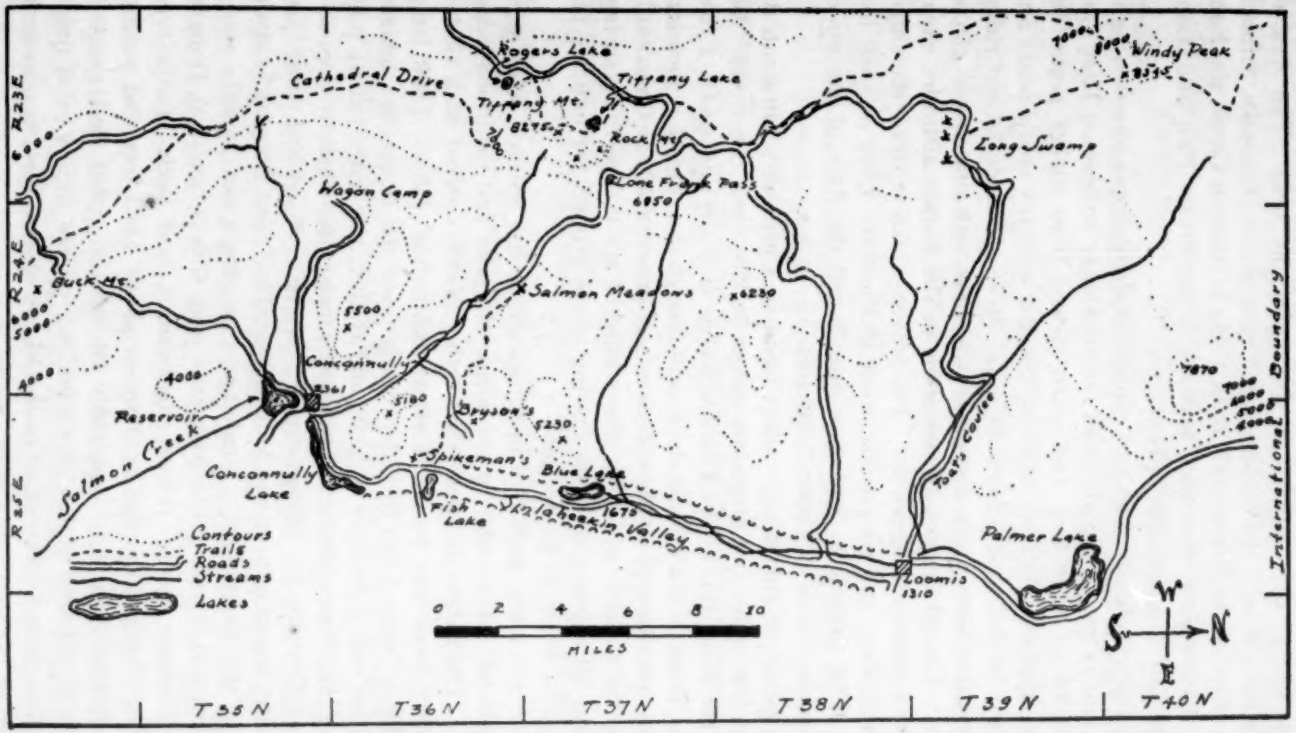
[1]A coöperative study between the State College of Washington and the Washington Game Department. The birds of this study are Richardson's Grouse, *Dendragapus obscurus richardsoni*. See page 503.

the east side of the Cascades, in the summer of 1940. The areas of main attention were the Sinlaheekin Valley, Funk Mountain, Mineral Hill, valleys of the North and South Forks of Salmon Creek, the Lone Frank Pass region, the area between Lone Frank Pass and Long Swamp, and Toat's Coulee (Text-figure 1).

The topography is rough and consists of sharp slopes terminating in peaks and ridges whose altitudes are strikingly uniform. They vary from 6,000 to 8,350 feet, and when viewed from higher peaks, the horizon appears relatively uniform because so many sharp peaks and crests rise to the same general height. Most of the peaks and ridges have resulted from water dissection combined with subsequent glacial erosion. Glacial cirques are common in the higher altitudes where they form mountain meadows. The valleys which separate the ridges are rather deep and steep-sided; some of them are 2,500 to 3,500 feet deep. The altitude at both Conconully and the floor of the upper Sinlaheekin Valley is about 2,300 feet.

The principal ridges and valleys trend in a general north-south direction, but spurs and secondary ridges locally upset the trend. Because the main axis of the Cascade Range is north and south, a rain shadow forms on the eastern slope, and though the climate is therefore very dry, particularly in the summer-time (no rain fell at Conconully during the summer of 1940), many gulches are occupied by springs that flow all summer or cease flowing above ground yet indicate the presence of water by damp soil.

There are many park-like openings which are covered with grass or sagebrush (*Artemisia*) in the lower altitudes and on south-facing slopes. The ridges themselves are rather poorly covered with timber and form mountain meadows above timberline (about 7,000 feet). The slopes below 3,000 feet, depending upon the aspect, are covered with grass and a mixture of grass and timber, the latter chiefly ponderosa pine (*Pinus ponderosa*) except in moist sites where it gives way to some Douglas fir (*Pseudotsuga douglasi*). Ponderosa pine predominates between three and four thousand feet, and Douglas fir again occupies the damp sites. Ponderosa pine drops out rapidly above 4,000 feet and is replaced by lodgepole pine (*Pinus contorta*), Douglas fir, Englemann spruce (*Picea engelmanni*), and larch (*Larix occidentalis*). Lodgepole pine is common above 5,000 feet and persists to timberline where it frequently becomes dwarfed and gnarled. Douglas fir is found almost to timberline, yet not in any great quantity higher than 5,000 feet. On the higher slopes, the Douglas fir is confined to the south side of the ridges immediately below their tops.



TEXT-FIGURE 1.—Map of the brood area studied. The position of the area in the northern Cascades can be oriented by the right side of the map which is the boundary between the United States and Canada.

The white-bark pine (*Pinus albicaulis*) is common above 5,000 feet, especially at timberline.

The moister conditions of the north slope result in a richer and more luxuriant vegetation. Spruce predominates; it also reaches lower altitudes there. Mountain meadows are more common on the north slopes where they are found in damp situations and along most streams. Many south-facing exposures are partially bare and covered with sagebrush, which extends up to 7,000 feet on suitable sites.

The temperature exceeded 90° F. several times during the middle of the day at Conconully, but it cooled off at night. Our minimum thermometer recorded night temperature as low as 43° F. Night temperatures in the low 50's and high 40's were common. Several recording were made near Lone Frank Pass at 7,000 feet; the highest in the shade was 68° F. We do not know what the minimum there may have been, but it was below freezing temperature.

Brood Territory.—There appears to be little territorialism in the 'blue grouse'; probably the brood territory should be classified as a home range. The brood range in the Okanogan region consisted, for the most part, of the lower slopes composed of open, park-like areas, dry but watered by a few springs, streams, or water holes. Although vegetation covered the ground, it was bunched so that bare space was present in varying proportions. The draws and gulches of the lower slopes sometimes contain water and are generally lined with relatively dense stands of brush; otherwise the ground, for the most part, is rather bare. Measurements taken August 13, 1940, of ten quadrats, each a meter square, averaged 73.8% bare ground. We also measured the trees in the pine stands which were occasionally used by broods of larger young during the day for resting cover and regularly at night for roosting cover. Two samples gave: (a) 150 stems to the acre, 2–9 inches DBH; height from 5 to 40 feet; and (b) 310 stems to the acre, 1½ to 12 inches DBH; height from 6 to 40 feet.

The broods immediately take to the open slopes upon hatching; as the young become larger, they work back into the tree-covered areas during late afternoon, probably for night roosting. Broods of young not able to fly apparently spend the night in the open. The characteristic plant of the open slopes used by broods is *Balsamorhiza*, and the brood association with it appears to be very close.

Broods were often found around springs and water holes, but we do not have enough data to determine whether or not they visit water regularly. It is probable that *Ribes* and *Amelanchier* berries provide water as well as food. In the North Fork Valley, however, we gen-

erally found them moving down the slopes to the creeks in the early morning and moving up from the creeks by the middle of the morning. They also visited the irrigation canal immediately above the town as well as Conconully Lake. Twice we observed birds drinking at springs, once at Spikeman's and once north of Blue Lake. The act does not differ from that of the domestic fowl.

Brood Counts.—Considerable difficulty was experienced in obtaining complete brood counts. The actual process of following a brood is in itself easy because the broods show little fear. The young stay close to the hen when small but tend to range farther as they grow older; at times the older ones may wander a hundred yards from her. Because of this tendency, it is difficult to locate all the members of the brood, and it is difficult to determine to what brood young belong when two or more broods are feeding near each other.

Although we observed several hundred broods, not allowing for duplicates, it was possible to obtain good figures for but ninety-nine. Ninety-two of these were found with females and seven without. Although the broods were actually scattered over more than a thousand square miles, most were observed in the upper Sinlaheekin Valley around Spikeman's, and the valley of the North Fork of the Salmon within two miles of Conconully (Text-figure 1). Some figures were obtained in Toat's Coulee and the Cathedral Drive region, and late in the season we obtained a few from Rock Mountain, Lone Frank Pass, and Roger's Lake.

Several times we observed broods of blue grouse mixed with Ruffed Grouse. On August 10, 1940, we found such a mixture at the spring on the Bryson ranch. August 13, 1940, we saw one Ruffed Grouse mixed with a brood of six young and two adult female blue grouse. Occasionally we observed young Ruffed Grouse and young blue grouse wandering together without females. The greatest amount of such mixing was noticed near Spikeman's where the heaviest concentration of both occurred.

Late in July the brood-organization appears to break down to some extent and a shuffling of young to take place. The fact that many young are found alone or in small bands at this season raises a question whether these birds are wandering young or young ranging far from the female. We encountered several bands containing birds of two different sizes, which would bear out belief that the young are not all ranging far from the female but are true wandering bands. Frequently we were unable to find any females within a reasonable distance. Sometimes the nearest female was with a full complement

of young, so that it would be unlikely for the wandering young to be part of her brood. In many instances we found females roaming alone or even in bands of two or three after late July, which probably indicates a loss of young or a break-up in broods. On August 2 we saw three females together among some Douglas fir trees in Toat's Coulee, 10 miles west of Loomis. There were no young with these birds and their actions indicated that they were not brood females or at least not recently with young. We were not able to collect any of the broodless females, however, in order to determine by examination whether or not they were nonbreeding birds.

Our brood studies lead us to believe that the brood instinct is rather low in the female and perhaps non-existent in the male. The breakdown of the brood instinct, as revealed by breakdown of brood composition, occurs much earlier in the blue grouse than in other gallinaceous birds with which we are familiar. We had some opportunity to compare broods of blue and Ruffed Grouse in the same areas; it is clear that the brood breakdown occurs much earlier in the former than in the latter. The Ruffed Grouse broods gave little indication of splitting late in August, and the only positive evidence which we had that broods were not intact consisted of the appearance of young with the broods of blue grouse. These may have been young that lost their mothers or that wandered from their own broods and joined the broods of blue grouse.

Some blue grouse broods break up earlier than others, for both attended and unattended broods were found on the same dates. Some females ran with their broods when the young were the size of, or even larger than, the hen. For the most part, however, the females seem to abandon the young before they reach the winter grounds; the proportion of unattended broods was much higher in the higher altitudes. The disbanding of broods seems to be a progressive gaining of independence on the part of old and young rather than a sudden abandonment.

During the early part of the season, the males were frequently found close to the broods; on numerous occasions we found them 'hooting' when with, or at least in the neighborhood of, the broods. But we are not able to state definitely whether or not the males actually ran with the broods. Presumably the association of the male with the broods is a matter of choice of area rather than of an interest in them. In early summer it was usually possible to locate a male within a short distance of a brood, but the males were found less and less associated with broods as the intensity of hooting decreased.

On numerous occasions, much too frequent for chance, we found

two females attending a single brood. On several occasions we found single males associated with broods attended by two females. The two explanations which immediately come to mind to account for the two females are: (a) two females with one brood; and (b) two broods together, each with one female. Our average figures for the broods follow:

99 broods averaged 3.65 young;
92 broods with females averaged 3.67 young;
7 broods without females averaged 3.29 young;
83 broods with one female averaged 3.49 young;
9 broods with two females averaged 5.33 young.

The sample is small but the average of the broods with two females is 5.33, less than twice that for broods with one female. It would seem that the average should approximate twice that for broods with single females—or seven young—if these were double broods. The largest brood with two females presumably also should have been larger than the largest brood with one female. The largest brood with two females numbered six, whereas the largest brood with one female numbered eight. It proved more difficult, however, to obtain complete brood counts for those attended by two females than for those attended by one female because the former tended to scatter somewhat more widely. The nine two-female broods for which complete counts were obtained are:

Date	*Number of young*
June 12	5
June 21	6
June 29	6
July 1	6
July 1	4
July 3	5
July 3	5
July 3	5
August 13	6

One group found August 9 drinking from a spring in the orchard at Spikeman's was composed of two females and ten young. Their actions indicated that this band was composed of two broods arriving together rather than of one brood with two females.

Subsequent checks upon broods attended by two females indicated that the brood frequently broke up into two units. Sometimes the females and young would be together in a group; at times each female possessed half of the young; at other times the division would be unequal, so that one female possessed one young and the other the remainder.

In our computations of broods, we have considered all those with two females to be one brood rather than double broods. The evidence indicates that this is the correct procedure. All of the broods with two females were observed on the valley floor immediately north of Conconully and at Spikeman's, both of which were areas of brood concentration.

There appear to be four readily apparent explanations for the two females with one brood: (a) a female that lost a brood or whose nest had been broken up and subsequently attached herself to another brood, (b) nonbreeding females attending broods as 'nurse-maids,' (c) broods combined because of loss of young, and (d) broods combined because of the large number of broods in a small area.

There is no evidence to indicate that one female is dominated or resented by the other. There is likewise little indication that one female shows greater concern for the brood than the other, even though in a few instances one female flushed and showed the customary alarm and concern by cackling while the other bird flew silently to the trees. Single females with broods generally showed alarm, but sometimes they did not. The action of one or the other of two females attending a brood was not considered indicative of concern or of lack of concern for the brood. Presumably the maternal instinct is equally high in both.

Table 1 gives the size frequency of the ninety-four broods for which complete individual counts were obtained.

TABLE 1

Number of young	*Number of broods*	*Percentage*
1	13	13.83
2	12	12.77
3	13	13.83
4	29	30.85
5	15	15.96
6	9	9.57
7	1	1.06
8	2	2.13

The peak of frequency distribution is 4.00, slightly above the average brood size (3.67); there is a tendency for the curve to skew on the lower side.

The brood size has been averaged by five-day intervals (Table 2) and shows an uneven drop, probably because of the lack of sufficient data.

The brood size has been averaged also by ten-day intervals (Table 3), and, as in the five-day figures, the drop during late July still shows

TABLE 2

Interval	*Number of broods*	*Number of young*	*Average size*
June 19–23	17	62	3.65
June 24–28	1	4	4.00
June 29–July 3	12	50	4.25
July 4–8	—	—	—
July 9–13	11	50	4.55
July 14–18	8	41	5.12
July 19–23	18	58	3.22
July 24–28	1	3	3.00
July 29–Aug. 2	5	8	1.60
Aug. 3–7	4	8	2.00
Aug. 8–12	13	46	3.54
Aug. 13–17	3	11	3.67
Aug. 18–22	6	20	3.33
Total	99	361	3.65

TABLE 3

Interval	*Number of broods*	*Number of young*	*Average size*
June 19–28	18	66	3.67
June 29–July 8	12	50	4.25
July 9–18	19	91	4.80
July 19–28	19	61	3.21
July 29–Aug. 7	9	16	1.78
Aug. 8–17	16	57	3.56

itself. The August 22–26 interval included fifteen broods averaging 2.80; the July 22–31 interval, seventeen broods averaging 2.65.

During fourteen days of our observation, we were able to obtain complete counts on three or more broods each day; these have been compiled separately (Table 4). Fourteen broods counted on July 23 averaged but 2.79 which is lower than for later brood-counts.

The data of Tables 2, 3, and 4 indicate that the brood size undergoes a general drop from the early part of summer to at least late August. In addition, a somewhat sudden drop begins in mid-July and reaches a low point about the first of August. The subsequent recovery is not great enough to restore the broods to the size of late June and early July. The shuffle of young and shift in brood habits are noticeable in the field, even though it is not possible to obtain complete evidence without recourse to banding and marking.

Some shuffling of broods and abandonment by females of lessened maternal instinct make their appearances between the middle and

TABLE 4

AVERAGES FOR DAYS WHEN THREE OR MORE BROODS WITH FEMALES WERE CHECKED

Date	*Number of broods*	*Average size*
June 20	3	4.67
June 21	10	3.80
June 29	3	3.00
July 1	4	4.75
July 3	5	4.40
July 10	5	3.80
July 12	6	5.17
July 17	8	5.12
July 23	14	2.79
Aug. 2	3	1.67
Aug. 6	4	2.00
Aug. 9	5	4.00
Aug. 10	4	4.25
Aug. 18	3	3.33

end of July. Young birds may shift for themselves in bands or join other broods and thereby re-establish the size of the brood as indicated by subsequent counts. Some bands, with and without females, contained two distinct sizes of young. It may be that the figures for late July have included some partially broken-up broods.

The movement up the mountain slopes can be detected between mid-July and the first of August; it seems to be correlated with the break-up of broods. It may be that after the birds start up the mountains, many of the groups no longer constitute true broods but are bands composed of both adult females and young birds. Should the band be under the 'leadership' of the female, it could be considered a true brood; on the other hand, if the female has lost most if not all of the brood instinct, and is merely associated with the young, the group would be a band rather than a brood. It is possible that the brood abandonment of July results from low maternal instinct in first-year females. If this were true, the high average brood-size late in the season would result from greater brooding continuity in older females.

The mechanism of shuffling is not understood. On July 21, for example, some broods of young were showing indications of breaking up; we found a number of females and young feeding in a clump of *Amelanchier* and flushed twenty-one birds. There appeared to be no semblance of brood composition among the twenty-one birds, and every sign pointed to mingling.

Voice.—Small chicks peep somewhat like chicks of domestic fowls, but the half-grown young have a peculiar wailing cry which seems to be the call of lost birds. The female running with the brood has a low cluck very much like that of a domestic hen but pitched distinctly lower. Upon flushing during the early part of the season, the female usually flies to a nearby tree and gives a chicken-like cackle in flight, probably a warning to the young. At times she may cackle from her perch. Later, when the brood instinct begins to break down, the females generally flush noiselessly. Early in the season the females fly only short distances, but later they fly as much as a quarter or half mile before treeing.

Growth Rate.—Our data for growth-rate studies are not nearly sufficient; we have satisfactory records for the weights of but twenty-one young males and twenty-eight young females. It is unlikely that a good picture of growth rate will be available until weights for several hundred growing males and females are available. We believe, however, that theoretical and sketchy though they may be, the data are of some value in indicating trends in growth of the young blue grouse.

TABLE 5

WEIGHT AND GROWTH RATE OF YOUNG MALES

Date	*Net weight*	*Average daily growth**
July 3	373.2	10.70
July 3	422.8	12.21**
July 3	291.1	8.21
July 3	292.1	8.25
July 21	576.0	10.90
July 25	573.4	10.06
Aug. 8	737.9	10.40
Aug. 9	628.2	8.69
Aug. 10	650.8	8.88
Aug. 10	772.2	10.59
Aug. 10	695.6	9.52
Aug. 10	850.8	11.70
Aug. 12	639.3	8.48
Aug. 13	557.0	7.26***
Aug. 13	711.9	9.35
Aug. 14	689.3	8.92
Aug. 16	828.2	10.42
Aug. 18	641.5	7.87
Aug. 18	615.6	7.54
Aug. 18	628.1	7.70

*Based upon June 1
**Fastest growth rate
***Slowest growth rate

No figures were obtained for the weight of newly hatched chicks, but by comparison with data from other sources, it would seem that twenty grams is a fairly representative figure. The date of hatching has been assumed as June 1 and all data computed from this 'zero' day. The net body-weight figures have been obtained by weighing the bird and subtracting the weight of the crop and gizzard contents. The daily growth rate has been computed on the basis of the number of days elapsing from June 1, after subtracting the assumed weight of the newly hatched chick from the body weight.

The weights and growth rates for the young males and females, respectively, are given in Tables 5 and 6.

A frequency table of the average daily growth rate has been compiled for the young males as well as the young females, using an in-

TABLE 6

WEIGHT AND GROWTH RATE OF YOUNG FEMALES

Date	*Net weight*	*Average daily growth**
June 20	128.0	5.40***
June 23	241.6	9.63
June 23	213.7	8.42
June 23	251.1	10.05
July 3	394.8	11.36
July 3	317.0	9.00
July 3	300.3	8.49
July 3	403.8	11.63**
July 3	398.0	11.45
July 3	244.5	6.80
July 7	320.8	8.13
July 7	333.6	8.48
July 10	304.2	7.11
July 17	434.9	8.83
July 21	434.5	8.13
Aug. 10	591.6	8.05
Aug. 11	452.2	6.00
Aug. 16	516.5	6.45
Aug. 18	546.1	6.66
Aug. 18	773.8	9.54
Aug. 18	672.8	8.26
Aug. 18	535.1	6.52
Aug. 18	844.4	10.43
Aug. 18	507.2	6.17
Aug. 18	666.8	8.19

*Based upon June 1
**Fastest growth rate
***Slowest growth rate

terval of 1.50 grams (Table 7). The males averaged 9.38 grams a day and the females 8.37.

TABLE 7

Interval	*Number*	
	Female	*Male*
5.01–6.50	4	0
6.51–8.00	4	4
8.01–9.50	10	7
9.51–11.00	4	7
11.01–12.50	3	2

The maximum daily growth rate was 12.21 grams for the males and 11.63 grams for the females. The minimum daily growth rate was 7.26 grams for the males and 6.00 grams for the females. Four very low growth rates (2.87, 3.37, 3.49, and 3.61) were obtained but these were probably sick birds. Using the net weights for the average male and female, we find that the average growth rate of the male

TABLE 8

NUMBER OF DAYS TO REACH MATURITY, COMPUTED ON THE BASIS OF 20-GRAM WEIGHT AT PRESUMED HATCHING DATE (JUNE 1) AND STRAIGHT-LINE GROWTH

Sex	*Type of growth rate*	*Growth rate*	*Type of adult weight*	*Weight*	*Computed number of days to maturity*	*Computed maturity date*
Male	Average	9.38	Average	1112.2	119	Sept. 27
Female	Average	8.37	Average	839.8	100	Sept. 8
Male	Fastest	12.21	Average	——	91	Aug. 30
Female	Fastest	11.63	Average	——	72	Aug. 9
Male	Slowest	7.26	Average	——	153	Oct. 29
Female	Slowest	6.00	Average	——	140	Oct. 18
Male	Average	——	Heaviest	1206.1	129	Oct. 7
Female	Average	——	Heaviest	973.4	116	Sept. 24
Male	Fastest	——	Heaviest	——	99	Sept. 7
Female	Fastest	——	Heaviest	——	84	Aug. 23
Male	Slowest	——	Heaviest	——	166	Nov. 13
Female	Slowest	——	Heaviest	——	162	Nov. 10
Male	Average	——	Lightest	1002.3	107	Sept. 15
Female	Average	——	Lightest	711.0	85	Aug. 23
Male	Fastest	——	Lightest	——	82	Aug. 11
Female	Fastest	——	Lightest	——	61	July 31
Male	Slowest	——	Lightest	——	138	Oct. 16
Female	Slowest	——	Lightest	——	119	Sept. 29
				Average	112.4	Sept. 20*

*If all possibilities are equally distributed.

indicates that the average male would reach maturity in 119 days, or September 27, and the average female in 100 days or September 8, were growth to continue in a straight line. The growth rate tapers off before maturity is reached, so that the date of maturity is undoubtedly later. The few figures we have indicate that the growth rate increases during the first thirty days of life and then drops off at the rate of 0.05 grams a day in the female and a little less in the male during the next six weeks; it probably doubles after that. We have used the respectively heaviest, lightest, and average growth-rate figures; together with the heaviest, lightest, and average weights of the adults to make up a table indicating the probable range of maturity on a straight-line trend (Table 8). On the basis of a tapering-off of the growth rate, the figures of the table probably indicate maturity two to three weeks earlier than is the actual case.

The young females apparently reach maturity earlier than the young males despite the faster growth rate of the males. Table 8 indicates strongly the probable extension of maturity from September to November. From all indications, it would appear that the majority of young blue grouse do not reach maturity until about October 1 or perhaps later. It would seem logical, therefore, that the hunting season should not open earlier than October 1.

The Upward Migration.—It appears from our field study that the males migrate to winter grounds in the high altitudes earlier than the females. The upward movement of the latter apparently coincides with the upward movement of the broods, perhaps because the first broods that move upward are with the females. On July 12, it was noted that males and an occasional lone female were moving up the north slope of Mineral Hill. These males were usually banded together in groups of three to six. No broods were moving with them although some movement of broods and old birds had been noted on Funk Mountain. As a nest of the 'blue grouse' had been found near the top of this mountain, it may be that the broods were resident. July 17, a hen with four young was found at 4,200 feet on Mineral Hill, a little below a nest found on the same hill. July 19, we observed a female and brood in the road immediately below the summit of Buck Mountain at 5,000 feet; it appeared that this brood was migrating. July 25, a hen with three young was found on the south slope of Rock Mountain at 7,500 feet in a high, narrow meadow which reached above timberline. This was the earliest brood found at so high an altitude.

Our impression from field studies is that the birds migrate up

Funk Mountain earlier on the dry western slope than on the moister eastern one. Open, park-like grassy areas extend to 4,500 feet on the western slope; on the east they extend not higher than 3,000 feet, and in some places the timber reaches to the floor of the Sinlaheekin Valley. It is logical that the birds should move more rapidly across the open parks of the western side and more slowly through the timber of the eastern side. On August 6, we found numbers migrating through Douglas fir on the eastern side at an altitude of 4,000 feet. The adult males were in bands of three to six, but the unattached females apparently were either alone or in groups of two or three. There were several broods composed of a female with half-grown young, as well as several bands of half-grown young without females.

The females accompanying the young paid little attention to them and apparently the brood composition had almost completely broken down, at least among the migrating birds. August 8, we found a band, evidently migrating, of two females and four young south of Lone Frank Pass at an elevation of 5,000 feet. August 12, we found a young male migrating on foot along the road south of Salmon Meadows. The same day a lone female was observed coming up the slope from the creek bottom and crossing the road to the ridge east of Salmon Meadows.

It would seem that the earliest upward movement, at least among the young birds, may begin shortly after the middle of July and that migration is well under way by mid-August. It is probable that the upward migration spreads over a period of two or two and one-half months. No doubt most grouse are on or near their winter grounds by the first of October, but some may linger in the valleys until November. The number of birds observed above timberline or in the stunted trees at timberline indicates that migrating birds sometimes move above timberline in late summer, probably to feed upon grasshoppers and *Vaccinium* berries, and down into the timber again for the winter.

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NINETEENTH SUPPLEMENT TO THE AMERICAN ORNITHOLOGISTS' UNION CHECK-LIST OF NORTH AMERICAN BIRDS[1]

THE Committee charged with the revision of the A.O.U. Check-List had expected to have the fifth edition completed and in print by this time. Unavoidable delays, in part due to the war, have prevented this. The status of the work was discussed in the meeting of the Council held in New York in October, 1943, where it was decided that it would be necessary to hold the completion of the final manuscript and its publication for the present. Such decision was necessary due to shortage in funds and the existing high costs in publication caused by the manpower situation, and the scarcity of suitable paper.

In view of this, the Committee was instructed to prepare, for issuance in 'The Auk,' a digest of the changes agreed upon to date. This is covered in the pages that follow. In addition to the cases here listed there are numerous others on which committee action is only partly complete, and others that have come up recently that are still to be considered. It is hoped to have decision on most of these reasonably complete by the close of the year.

In the fifth edition it has been decided to supply a specific heading for each species that has been divided into subspecies. This heading will include the scientific name for the species, a group common name (as Robin, Song Sparrow), and a condensed summary of the range of species as a whole. Such headings will be given for species like *Colymbus grisegena* where we have one form in North America, *Colymbus grisegena holböllii,* Holboell's Grebe, while others are found outside our limits, as well as for those confined to our geographic area. As an exception, this will not be done in the case of extralimital species of purely casual or accidental occurrence, e. g., like the Rook which has been reported as accidental in Greenland. Following the species headings there will come the subspecies, with scientific and common names, original reference, and detailed range, as in the fourth edition.

In common names based on names of persons the possessive will be used, *e. g.,* Audubon's Warbler.

Original spellings will be used in all scientific names, *e. g., Carpodacus cassinii* instead of *C. cassini* as in the fourth edition.

In the list that follows, references are given where required to a source of information on the action indicated. In the case of newly

[1] The Eighteenth Supplement was published in 'The Auk,' vol. 40, July, 1923, pp. 513–525.

described forms this is the original reference. In other instances the citation is to discussion or other listing. The page reference preceding each item is to the fourth edition. With additional subspecies there are included a common name, a number, and a brief statement of range. The range as listed in these instances is general, and will be subject to amplification and change in the final work.

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Page

3 *Colymbus grisegena holboelli* becomes *Colymbus grisegena holböllii*, this being the original spelling.

4 *Colymbus dominicus bangsi* van Rossem and Hachisuka. BANGS'S GREBE. [5a.] Trans. San Diego Soc. Nat. Hist., 8, no. 23, June 15, 1937, 323. (Santiago, Baja California, México.) Additional subspecies. Baja California and southern Sonora, probably to other areas of northwestern México.

5 Subgenus *Phoebastria* omitted. See Peters, Check-list, 1, 1931, 41–45.

6 *Thalassogeron chlororhynchos* becomes *Diomedea chlororhynchos* Gmelin, as *Thalassogeron* is not separable. See Peters, Check-list, 1, 1931, 44; Murphy, Oceanic Birds South America, 1, 1936, 518.

9 Subgenus *Calonectris* omitted. See Peters, Check-list, 1, 1931, 53, et seq.

10 *Thyellodroma* is included as a subgenus under *Puffinus*. *Thyellodroma cuneata* becomes *Puffinus pacificus cuneatus* Salvin, and *Thyellodroma bulleri* becomes *Puffinus bulleri* Salvin. See Peters, Check-list, 1, 1931, 55–56.

13 *Daption capense* becomes *D. capensis*, this being the original spelling.

13 Subfamily name *Hydrobatinae* omitted, as no subfamily groups are recognized in the *Hydrobatidae*. See Peters, Check-list, 1, 1934, 68.

15 *Loomelania* Mathews, Bull. Brit. Orn. Club, 54, March 29, 1934, 119. Type, by original designation, *Procellaria melania* Bonaparte. Additional genus for *Oceanodroma melania*, which becomes *Loomelania melania* (Bonaparte). See Murphy, Oceanic Birds South America, 2, 1936, 726, 743.

16 Subfamily name *Oceanitinae* omitted. See Peters, Check-list, 1, 1931, 68.

16 *Oceanites oceanicus* becomes *Oceanites oceanicus oceanicus* because of extralimital subspecies. See Peters, Check-list, 1, 1931, 68; Murphy, Oceanic Birds South America, 2, 1936, 748.

17 *Phaëthon aethereus* becomes *Phaëthon aethereus mesonauta* Peters, Occ. Pap. Boston Soc. Nat. Hist., 5, 1930, 261. (Swan Key, Almirante Bay, Panamá.)

17–18 Subgenera *Phaëthon*, *Leptophaethon* and *Scaeophaethon* omitted, as no subgenera are recognized in *Phaëthon*. See Peters, Check-list, 1, 1931, 78.

Page

18 *Phaëthon rubricaudus rothschildi* becomes *Phaëthon rubricauda rothschildi*, *rubricauda* being the original spelling.

19 *Pelecanus occidentalis occidentalis* becomes *Pelecanus occidentalis carolinensis* Gmelin, Syst. Nat. 1, pt. 2, 1789, 571. (Charleston Harbor, South Carolina.) See Peters, Check-list, 1, 1931, 81; Murphy, Oceanic Birds South America, 2, 1936, 808.

21 *Sula piscator* becomes *Sula sula sula* (Linnaeus). From *Pelecanus Sula* Linnaeus, Syst. Nat., ed. 12, 1, 1766, 218. ("In Pelago Indico" = Barbados, Lesser Antilles.) See Peters, Check-list, 1, 1931, 84; Mathews, Birds Austr., 4, 1915, 216; Grant and Mackworth-Praed, Bull. Brit. Orn. Club, 53, 1933, 185.

21 *Sula brewsteri* becomes *Sula leucogaster brewsteri*, being a race of the wide-ranging *leucogaster*. See Peters, Check-list, 1, 1931, 85; Wetmore, Smiths. Misc. Coll., 98, no. 22, 1939, 2.

22–23 Subgenera *Phalacrocorax, Compsohalieus* and *Urile* omitted, as no subgenera are recognized in *Phalacrocorax*. See Peters, Check-list, 1, 1931, 85–92.

24 *Anhinga anhinga* becomes *Anhinga anhinga leucogaster* (Vieillot). From *Plotus leucogaster* Vieillot, Nouv. Dict. Hist. Nat., nouv. éd., 1, 1816, 545. (Florida.) See van Rossem, Ann. Mag. Nat. Hist., October, 1939, 440; Wetmore, Proc. U. S. Nat. Mus., 93, 1943, 232–233.

25 *Fregata magnificens* becomes *Fregata magnificens rothschildi* Mathews. *Fregata minor rothschildi* Mathews, Birds Austr., 4, June 23, 1915, 280 (Aruba, Netherlands West Indies). See Peters, Check-list, 1, 1931, 95; Murphy, Oceanic Birds South America, 2, 1936, 921, 927.

26 *Ardea occidentalis* becomes *Ardea occidentalis occidentalis* because of recognition of an extralimital form. See Peters, Check-list, 1, 1931, 101.

28 *Egretta* replaced by *Leucophoyx* Sharpe, Bull. Brit. Orn. Club, 3, 1894, 39. Type, by original designation, *Ardea candidissima* Gmelin = *Ardea thula* Molina. See Sharpe, Cat. Birds Brit. Mus., 26, 1898, 124; Peters, Check-list, 1, 1931, 113. The forms will be as follows:

Leucophoyx thula thula (Molina).

Leucophoyx thula brewsteri (Thayer and Bangs).

28 *Dichromanassa rufescens dickeyi* becomes a synonym of *D. r. rufescens*. See Griscom, Amer. Mus. Nov., no. 235, 1926, 9; Peters, Check-list, 1, 1931, 109.

38 *Branta nigricans* becomes *Branta bernicla nigricans*, as it is considered a race of *bernicla*. See Peters, Check-list, 1, 1931, 149; Witherby, Jourdain, Ticehurst and Tucker, Handbook British Birds, 3, 1939, 213–214.

40–41 Subgenera *Chen* and *Exanthemops* omitted, as no subgenera are recognized in *Chen*. See Peters, Check-list, 1, 1931, 146.

46–48 The species listed in the genera *Dafila, Eunetta, Nettion* and *Querquedula* are all included in the genus *Anas*. See Peters, Check-list, 1, 1931, 162–167. The names will be as follows:

Anas acuta tzitzihoa Vieillot.

Anas bahamensis bahamensis Linnaeus.

Anas falcata Georgi.

Anas crecca Linnaeus.

Anas carolinensis Gmelin.

Anas formosa Georgi.

Anas discors Linnaeus.

Page

Anas cyanoptera cyanoptera Vieillot. (*Querquedula cyanoptera* becomes *A. c. cyanoptera* because of an extralimital subspecies.)

50–52 Subgenera *Nyroca, Aristonetta, Fulix* and *Fuligula* omitted, as no subgenera are recognized in *Nyroca*. See Peters, Check-list, 1, 1931, 173–176.

51 *Nyroca marila* becomes *Nyroca marila nearctica* (Stejneger) from *Aythya marila nearctica* Stejneger, U. S. Nat. Mus., Bull. 29, 1885, 161. (North America.) See Peters, Check-list, 1, 1931, 176.

56 *Somateria v-nigra* becomes *Somateria mollissima v-nigra*, as the two are considered conspecific. See Peters, Check-list, 1, 1931, 179.

57 *Melanitta fusca* becomes *Melanitta fusca fusca*, through recognition of the subspecies that follow. See Peters, Check-list, 1, 1931, p. 181.

58 *Melanitta deglandi* becomes *Melanitta fusca deglandi* (Bonaparte), since it is considered to be conspecific with *fusca*. See Peters, Check-list, 1, 1938, 181.

58 *Melanitta fusca dixoni* (Brooks). WESTERN WHITE-WINGED SCOTER. [165a.] *Oidemia deglandi dixoni* W. S. Brooks, Bull. Mus. Comp. Zoöl., 59, 1915, 393. (Griffin Point, Arctic Alaska.) Additional subspecies. Probably breeding in western Alaska; in winter to Pacific coast from Aleutian Islands to California.

58 *Oidemia americana* becomes *Oidemia nigra americana*, since it is considered conspecific with the Old World form. See Peters, Check-list, 1, 1931, 181.

61 *Cathartes aura teter* Friedmann. WESTERN TURKEY VULTURE. [325a.] Proc. Biol. Soc. Washington, 46, Oct. 26, 1933, 188. (Riverside, California.) Additional subspecies. Southern British Columbia and southern Michigan south to northern México, eastern Texas, Kansas and Nebraska.

61 *Coragyps atratus atratus* becomes *Coragyps atratus*. See Friedmann, Proc. Biol. Soc. Washington, 46, 1933, 188.

64 The genus *Astur* included in *Accipiter*. See Peters, Check-list, 1, 1931, 205. The forms will stand as follows: *Accipiter gentilis atricapillus* (Wilson), *Accipiter gentilis striatulus* (Ridgway), as the New World birds are considered conspecific with *gentilis*.

65 *Accipiter velox velox* becomes *Accipiter striatus velox*, as *striatus*, for an extralimital subspecies, is the older name. See Peters, Check-list, 1, 1931, p. 221.

65 *Accipiter striatus suttoni* van Rossem. MEXICAN SHARP-SHINNED HAWK. [332a.] Auk, 56, 1939, 127. (Mesa del Chipinque, near Monterrey, Nuevo León, México, altitude about 4500 feet.) Additional subspecies. From east side of San Luis Mountains, New Mexico, south through the highlands to Veracruz and Jalisco; in winter to lowlands of Sonora.

65 *Accipiter striatus perobscurus* Snyder. NORTHWEST COAST SHARP-SHINNED HAWK. [332b.] Occ. Papers Royal Ontario Mus. Zool., 4, July 14, 1938, 4. (McClinton Creek, Massett Inlet, Graham Island, Queen Charlotte Islands, British Columbia.) Additional subspecies. Islands and adjacent mainland from Yakutat Bay, Alaska, to Vancouver Island (Comox) and southern British Columbia (Brackendale); in winter to central California and the Okanagan Valley, British Columbia.

65 *Accipiter cooperi* becomes *Accipiter cooperii*, to conform with original spelling.

65–66 *Buteo borealis borealis* becomes *Buteo jamaicensis borealis*, and the remaining races of this species have the specific name changed to *jamaicensis* since this is the oldest specific name available for the group. (The typical form of *jamaicensis* is extralimital.) See Peters, Check-list, 1, 1931, 231.

Page

66 *Buteo jamaicensis alascensis* Grinnell. ALASKA RED-TAILED HAWK. [337e.] Univ. California Publ. Zoöl., 5, no. 2, Feb. 18, 1909, 211. Glacier Bay, Alaska.) Additional subspecies restored to list. Yakutat Bay, Alaska, to the Queen Charlotte Islands. See A. O. U. Check-List, ed. 3, 1910, 158; Peters, Check-list, 1, 1931, 231; Taverner, Condor, 38, 1936, 66–71.

66 *Buteo jamaicensis fuertesi* Sutton and Van Tyne. FUERTES'S RED-TAILED HAWK. [337g.] Occ. Papers Mus. Zool. Univ. Michigan, no. 321, Sept. 23, 1935, 1. (Calamity Creek Bridge, 22 miles south of Alpine, Brewster County, Texas.) Additional subspecies. Southwestern Texas.

66 *Buteo borealis harlani* becomes *Buteo harlani*. See Peters, Check-list, 1, 1931, 232; Taverner, Condor, 38, 1936, 66–71.

65–68 Subgenera *Buteo, Tachytriorchis, Buteola* and *Triorchis* are omitted. Peters, Check-list, 1, 1931, 228–239.

69–70 Genus *Asturina* included in *Buteo*, while *Asturina plagiata plagiata* becomes *Buteo nitida maxima* van Rossem, from *Asturina plagiata maxima* van Rossem, Condor, 32, 1930, 303. (San Javier, Sonora, México.) See van Rossem, Bull. Mus. Comp. Zoöl., 77, 1934, 429. For inclusion under specific name *nitida* see Peters, Check-list 1, 1931, 240.

70 *Urubitinga* (of A. O. U. Check-List) becomes *Buteogallus* Lesson, Traité d'Orn., livr. 2, 1830, 83. Type, by monotypy, *Buteogallus cathartoides* Lesson = *Falco aequinoctialis* Gmelin. *Urubitinga anthracina anthracina* becomes *Buteogallus anthracinus anthracinus*. See Peters, Check-list, 1, 1931, 244.

71 *Haliaeetus leucocephalus alascanus* becomes *Haliaeetus leucocephalus washingtoniensis* (Audubon). From *Falco Washingtoniensis* Audubon, Birds Amer., fol. ed., 1827, pl. 11. (Henderson, Kentucky.) See Peters, Check-list, 1, 1931, 258.

72 *Circus hudsonius* becomes *Circus cyaneus hudsonius*, as it is considered conspecific with the Old World bird. See Peters, Check-list, 1, 1931, 265; Wetmore, Proc. U. S. Nat. Mus., 86, 1939, 182.

72 Subfamily *Pandioninae* becomes Family *Pandionidae*. See Compton, Univ. Calif. Publ. Zoöl., 42, 1938, 173–212; Wetmore, Smiths. Misc. Coll., 99, no. 4, 1940, 40; idem, 99, no. 7, 1940, 1, 5.

72 *Pandion haliaëtus carolinensis* becomes *Pandion haliaetus carolinensis*, to conform with the original spelling.

73 *Falco rusticolus candicans* is included in *Falco rusticolus obsoletus*. See Swann, Mon. Birds of Prey, pt. 14, 1936, 420–423.

74 *Falco peregrinus peregrinus* is omitted and records from Greenland are placed under *Falco peregrinus anatum*. See Jourdain, Auk, 50, 1933, 203.

79 *Dendragapus obscurus richardsoni* becomes *Dendragapus obscurus richardsonii*, to conform with original spelling.

79 *Dendragapus obscurus flemingi* is placed in synonymy of *D. o. richardsonii*. See Peters, Check-list, 2, 1934, 29.

79 *Dendragapus obscurus pallidus* Swarth. OREGON DUSKY GROUSE. [297g.] Proc. California Acad. Sci., 20, 1931, p. 4. (Cornucopia, Baker County, Oregon.) Additional subspecies. South-central British Columbia to eastern Washington and northeastern Oregon.

79 *Dendragapus fuliginosus* and subspecies are placed as races under *Dendragapus obscurus*, with corresponding change in the specific name. See Peters, Check-list, 2, 1934, 28–29.

Page

81 *Bonasa umbellus brunnescens* Conover. VANCOUVER ISLAND RUFFED GROUSE. [300f.] Condor, 37, 1935, 204. (Comox, Comox District, Vancouver Island, British Columbia.) Additional subspecies.[1] Vancouver Island and adjacent mainland from Vancouver to Malaspina Inlet.

82 *Lagopus lagopus leucopterus* Taverner. WHITE-SHAFTED PTARMIGAN. [301e.] Ann. Rep. Nat. Mus. Canada, for 1930, 1932, 87. (Camp Kungovik, western coast of Baffin Island, 65° 35′ n. lat.) Additional subspecies. Arctic islands from southern Banks Island, the mainland near Dolphin and Union straits, and Southampton and southern Baffin Islands, northward.

83–84 *Lagopus rupestris* and subspecies become races of *Lagopus mutus*, with corresponding change in the specific name. See Peters, Check-list, 2, 1934, 32–35.

85 *Tympanuchus cupido americanus* becomes *Tympanuchus cupido pinnatus* (Brewster). From *Cupidonia pinnata* Brewster, Auk, 2, 1885, 82. (Vermilion, South Dakota.) Change required as *Cupidonia americana* Reichenbach 1853 is a synonym of *T. c. cupido* (Linnaeus) 1758. See Peters, Check-list, 2, 1934, 41; Hellmayr and Conover, Cat. Birds Amer., 1, no. 1, 1942, 222–223.

86 *Pedioecetes phasianellus kennicottii* Suckley. NORTHWESTERN SHARP-TAILED GROUSE. [308c.] From *Pediocaetes Kennicottii* Suckley, Proc. Acad. Nat. Sci. Philadelphia, [13], 1861, 361. (Ft. Rae, and Big Island, Great Slave Lake.) Additional subspecies. See DuMont, Auk, 50, 1933, 432–433; Hellmayr and Conover, Cat. Birds Amer., 1, no. 1, 1942, 221. Mackenzie region and central Alaska to northern Alberta and British Columbia.

87 Family Perdicidae included in Family Phasianidae, where Subfamily Perdicinae becomes Subfamily Phasianinae to cover *Perdix* and *Phasianus*. See Peters, Check-list, 2, 1934, 87; Wetmore, Smiths. Misc. Coll., 99, no. 7, 1940, 6.

88 *Colinus ridgwayi* becomes *Colinus virginianus ridgwayi*. See Peters, Check-list, 2, 1934, 49.

89 *Lophortyx californica vallicola* becomes *Lophortyx californica californica*, and *Lophortyx californica californica* of the fourth edition becomes *Lophortyx californicia brunnescens* Ridgway. From *Lophortyx californicus brunnescens* Ridgway, Proc. Biol. Soc. Washington, 2, 1884, 94 (Santa Barbara, California, error = San Francisco). See Grinnell, Condor, 33, 1931, 37; Peters, Check-list, 2, 1934, 44.

90 *Lophortyx californica canfieldae* van Rossem. OWENS VALLEY QUAIL. [294e.] Auk, 56, Jan., 1939, 68 (Lone Pine, Inyo County, California). Additional subspecies. Owens Valley, California.

90 *Lophortyx gambeli* becomes *L. gambelii*, to conform with the original spelling, this change affecting both forms recognized under the species.

90 *Lophortyx gambeli sanus* becomes *Lophortyx gambelii sana* to agree in gender with the generic name.

91 *Oreortyx picta eremophila* van Rossem. DESERT MOUNTAIN QUAIL. [292c.] Condor, 39, Jan. 15, 1937, 22. (Lang Spring, Mountain Spring Canyon, Argus Mountains, Inyo County, California, elev. 6000 feet.) Additional subspecies. From about 37° 30′ n. lat. in the Sierra Nevada of California and extreme western Nevada through the mountains of southern California.

[1] Status of other proposed new races is under consideration.

Page

95 Subfamily Rallinae omitted. See Peters, Check-list, 2, 1934, 157.

95–96 *Rallus obsoletus obsoletus* and subspecies *levipes, beldingi* and *yumanensis* become subspecies of *Rallus longirostris*. See Oberholser, Proc. U. S. Nat. Mus., 84, 1937, 338–341.

98 *Coturnicops noveboracensis* becomes *Coturnicops noveboracensis noveboracensis*, because of an extralimital subspecies. See Peters, Check-list, 2, 1934, 193.

98 *Creciscus* becomes *Laterallus* "Pr. B." G. R. Gray, Cat. Gen. Subg. Birds, 1855, 120. Type, by monotypy, *Rallus melanophaius* Vieillot. See Peters, Proc. Biol. Soc. Washington, 45, 1932, 119; Check-list, 2, 1934, p. 189.

The names will be changed as follows:

Laterallus jamaicensis stoddardi (Coale).[1]

Laterallus jamaicensis coturniculus (Ridgway).

99 Subfamily Gallinulinae omitted. See Peters, Check-list, 2, 1934, 202.

99 Genus *Ionornis* becomes *Porphyrula* Blyth, Cat. Birds Mus. Asiat. Soc., 1849 (1852), 283. Type, by monotypy, *Porphyrula chloronotus* Blyth = *Porphyrio alleni* Thomson. *Ionornis martinica* becomes *Porphyrula martinica* (Linnaeus). Peters, Check-list, 2, 1934, 206.

103–104 Subgenera *Charadrius, Cirrepidesmus, Leucopolius* and *Aegialeus* omitted. See Peters, Check-list, 2, 1934, 245–254.

104 *Charadrius nivosus nivosus* and *C. n. tenuirostris* become *Charadrius alexandrinus nivosus* and *Charadrius alexandrinus tenuirostris*, as they are considered races of the Old World bird. See Peters, Check-list, 2, 1934, 250.

105 *Charadrius semipalmatus* becomes *Charadrius hiaticula semipalmatus*, as it is considered a race of the Old World bird. See Peters, Check-list, 2, 1934, 247.

105 Genus *Pagolla* included under *Charadrius*, so that *Pagolla wilsonia wilsonia* and *P. w. beldingi* become *Charadrius wilsonia wilsonia* Ord and *Charadrius wilsonia beldingi* (Ridgway). See Peters, Check-list, 2, 1934, 254.

106 *Oxyechus* included under *Charadrius*, so that *Oxyechus vociferus vociferus* becomes *Charadrius vociferus vociferus* Linnaeus. See Peters, Check-list, 2, 1934, 252.

106 *Pluvialis apricaria apricaria* becomes *Pluvialis apricaria altifrons* (Brehm). From *Charadrius altifrons* Brehm, Handb. Naturg. Vög. Deutschland, 1831, 542. (Faeroe Islands.) See Jourdain, Auk, 50, 1933, 203 (where, however, the subspecific name is listed incorrectly as *atrifrons*); Witherby, Jourdain, Ticehurst and Tucker, Handbook Brit. Birds, 4, 1940, 369–371.

108 Subfamily Aphrizinae included in Arenariinae. See Peters, Check-list, 2, 1934, 271.

111 *Lymnocryptes minimus* becomes *Lymnocryptes minima*, to agree in gender with the generic name.

111 Subfamily Numeniinae included in Tringinae. See Peters, Check-list, 2, 1934, p. 258.

111 *Numenius americanus occidentalis* becomes *Numenius americanus parvus* Bishop, Auk, 27, 1910, 59. (Crane Lake, Saskatchewan.) See Bishop, Condor, 40, 1938, 226.

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[1] Proposed change to *L. j. pygmaeus* (Blackwall) awaits committee action.

Page

112 *Numenius arquatus arquatus* becomes *Numenius arquata arquata*, to conform with original spelling.

112–113 Genus *Phaeopus* included in *Numenius*. See Peters, Check-list, 2, 1934, 260–261. The forms will stand as follows:

Numenius phaeopus phaeopus (Linnaeus).

Numenius phaeopus hudsonicus Latham (since *hudsonicus* and the Old World Whimbrel are regarded as conspecific).

Numenius tahitiensis (Gmelin).

Numenius borealis (Forster).

117 *Calidris* Anonymous becomes *Calidris* Merrem, with the same reference. See Peters, Check-list, 2, 1934, 280.

119–121 *Pisobia* and *Pelidna* are included in *Erolia*. See Peters, Check-list, 2, 1934, 282–286. The forms will stand as follows:

Erolia acuminata (Horsfield).

Erolia melanotos (Vieillot).

Erolia fuscicollis (Vieillot).

Erolia bairdii (Coues) (not *bairdi*).

Erolia minutilla (Vieillot).

Erolia subminuta (Middendorff).

Erolia ruficollis (Pallas).

Erolia testacea (Pallas).

Erolia alpina alpina (Linnaeus).

Erolia alpina sakhalina (Vieillot).

123 *Ereunetes maurii* becomes *Ereunetes mauri*, to conform with original spelling.

125 *Philomachus* Anonymous becomes *Philomachus* Merrem, with the same reference. See Peters, Check-list, 2, 1934, 288.

129–130 *Catharacta skua* becomes *Catharacta skua skua*, and *Catharacta chilensis* becomes *Catharacta skua chilensis*. See Peters, Check-list, 2, 1934, 309–310; Murphy, Oceanic Birds South America, 2, 1936, 1006–1013.

130–135 Subgenera *Larus*, *Chroicocephalus*, *Hydrocoloeus*, and *Blasipus* omitted. Peters, Check-list, 2, 1934, 313–324.

132 *Larus fuscus graellsi*, recorded from Greenland, is based on a specimen of *Larus argentatus* and is, therefore, omitted. See Jourdain, Auk, 50, 1933, 204.

135 *Pagophila alba* becomes *Pagophila eburnea* (Phipps). From *Larus Eburneus* Phipps, Voy. N. Pole, append., 1774, 187. (Spitzbergen.) See Peters, Check-list, 2, 1934, 313.

138 *Gelochelidon nilotica vanrossemi* Bancroft. WESTERN GULL-BILLED TERN. [63a.] Trans. San Diego Soc. Nat. Hist., 5, no. 19, 1929, 284. (Salton Sea, Imperial County, California.) Additional subspecies. Breeds on Salton Sea and probably along the Gulf of California; in winter from the west coast of México to Ecuador.

138–140 Subgenera *Sterna* and *Sternula* omitted. See Peters, Check-list, 2, 1934, 331–341.

139 *Sterna paradisaea* Brünnich becomes *Sterna paradisaea* Pontoppidan. From *Sterna Paradisaea* Pontoppidan, Danske Atlas, 1, 1763, 622. (Christiansoë, Denmark.) See Hartert, Vögel pal. Fauna, Nachtrag, 1923, 85; Peters, Check-list, 2, 1934, 333.

139 *Sterna dougalli dougalli* becomes *Sterna dougallii dougallii*, to conform with original spelling.

Page

140 *Sterna antillarum antillarum* and *S. a. browni* become ***Sterna albifrons antillarum*** and ***Sterna albifrons browni***. See Wetmore, Birds of Porto Rico and Virgin Islands, 1927, p. 383; Peters, Check-list, 2, 1934, 341.

143–144 Subfamilies Plautinae and Alcinae omitted. See Peters, Check-list, 2, 1934, 350–351.

143 *Plautus* becomes *Pinguinus* Bonnaterre, Tabl. Encyc. Méth., Orn., 1, 1790, lxxxiii, 28. Type, by subsequent designation, ***Alca impennis*** Linnaeus (Ogilvie-Grant, 1898). See Ridgway, U. S. Nat. Mus., Bull. 50, 1919, pt. 8, 710; Peters, Check-list, 2, 1934, 351. The species will stand as ***Pinguinus impennis*** (Linnaeus).

145 *Alle* becomes *Plautus* Gunnerus, Trondheimske Selsk. Skrifter, 1, 1761, 263, pl. 6. Type, by monotypy, *Plotus* or ***Plautus columbarius*** Gunnerus = *Alca alle* Linnaeus. See Ridgway, U. S. Nat. Mus., Bull. 50, 1919, pt. 8, 706; Peters, Check-list, 2, 1934, 350. The name of the species becomes ***Plautus alle*** (Linnaeus).

146 *Cepphus grylle arcticus* (C. L. Brehm). NORTHERN BLACK GUILLEMOT. [27a.] From *Uria arctica* C. L. Brehm, Lehrb. eur. Vög., 2, 1824, 923. (Greenland.) Additional subspecies. Breeding from coasts of Greenland and southeastern Baffin Island south to Hamilton Inlet, Labrador. See Austin, Jr., Bull. N. E. Bird-Band. Assoc., 1929, 1–6.

146 *Cepphus columba* becomes ***Cepphus columba columba***, because of an extralimital subspecies. See Peters, Check-list, 2, 1934, 354.

147 *Brachyramphus marmoratus* becomes ***Brachyramphus marmoratus marmoratus***, because of extralimital subspecies. See Peters, Check-list, 2, 1934, 355.

147 *Endomychura* included in *Brachyramphus*. See Peters, Check-list, 2, 1934, 355. *Endomychura hypoleuca* becomes ***Brachyramphus hypoleucus hypoleucus*** Xantus through division into two races.

147 *Brachyramphus hypoleucus scrippsi* (Green & Arnold). SCRIPPS'S MURRELET. [25a.] From *Endomychura hypoleuca scrippsi* J. E. Green & L. W. Arnold, Condor 41, Jan. 17, 1939, 28. (Anacapa Island, California.) Additional subspecies. Breeding from Anacapa Island, California, to Natividad Island, Baja California; in winter north to Mendocino County.

147 *Endomychura craverii* becomes ***Brachyramphus craveri***, the change in the specific name being to conform with the original spelling.

148 *Ptychoramphus aleuticus* becomes ***Ptychoramphus aleuticus aleuticus*** through division into two races.

148 *Ptychoramphus aleuticus australis* van Rossem. MEXICAN AUKLET. [16a.] Ann. Mag. Nat. Hist., (11) 4, Oct., 1939, 443. (West San Benito Island, Baja California, México.) Additional subspecies. San Benito Islands to San Roque Island, Baja California.

149 Subgenera *Aethia, Ciceronia* and *Alcella* omitted. See Peters, Check-list, 2, 1934, 357–358.

150 Subfamily *Fraterculinae* omitted. See Peters, Check-list, 2, 1934, 358.

151 Superfamily *Columboidea* omitted. See Peters, Check-list, 3, 1937, 11.

151–152 Subgenera *Patagioenas, Chloroenas* and *Lithoenas* omitted. See Peters, Check-list, 3, 1937, 56–74.

153 *Zenaida zenaida zenaida* becomes ***Zenaida zenaida zenaida***. See Peters, Condor, 36, 1934, 213–215; Check-list, 3, 1937, 87.

Page

154 *Spilopelia* included in *Streptopelia*. See Peters, Check-list, 3, 1937, 98. The single form becomes *Streptopelia chinensis chinensis* (Scopoli).

155 Genus *Melopelia* included in *Zenaida*. See Peters, Condor, 36, 1934, 213–215; Check-list, 3, 1937, 87. The forms will stand as:

Zenaida asiatica asiatica (Linnaeus).

Zenaida asiatica mearnsi (Ridgway).

156 *Scardafella inca inca* becomes *Scardafella inca*, as subspecies are not recognized. See Peters, Check-list, 3, 1937, 103.

156 *Leptotila fulviventris angelica* becomes *Leptotila verreauxi angelica*. See Peters, Check-list, 3, 1937, 122.

158 *Cuculus optatus* becomes *Cuculus saturatus horsfieldi* Moore. From *Cuculus horsfieldi* Moore, in Moore and Horsfield, Cat. Birds Mus. Hon. East-India Co., 2, 1856–58 (1857), 703. (Java.) See Junge, Temminckia, 2, 1937, 202; Peters, Check-list, 4, 1940, 19.

162 *Otus asio swenki* Oberholser. NEBRASKA SCREECH OWL. [373m.] Journ. Washington Acad. Sci., 27, no. 8, Aug. 15, 1937, 354. (Chadron, Dawes County, Nebraska, altitude 3,450 feet.) Additional subspecies. Southern Manitoba to western Oklahoma and central Kansas.

163 *Otus a. inyoensis* Grinnell. SOUTHERN CALIFORNIA SCREECH OWL. [373n.] Auk, 45, 1928, 213. (Independence, Inyo County, California.) Additional subspecies. Southern California west of the desert region from Kern County to northwestern Baja California.

164 *Otus asio cardonensis* Huey. BANCROFT'S SCREECH OWL. [373o.] Auk, 43, 1926, 360. (Canyon San Juan de Dios, 10 miles east of Rosario, Baja California.) Additional subspecies. Pacific slope of Baja California from Santo Domingo and San Quintín to El Rosario.

164 *Otus flammeolus* becomes *Otus flammeolus flammeolus*, because of extralimital subspecies. See Griscom, Ibis, (13) 5, 1935, 549; Peters, Check-list, 4, 1940, 95.

164 *Otus trichopsis* becomes *Otus trichopsis aspersus* (Brewster). From *Megascops aspersus* Brewster, Auk, 5, 1888, 87. (El Carmen, Chihuahua, México.) See Peters, Check-list, 4, 1940, 103.

164 *Bubo virginianus subarcticus* becomes *Bubo virginianus wapacuthu* (Gmelin). From *Strix Wapacuthu* Gmelin, Syst. Nat., 1, pt. 1, 1788, 90. (Woods about Hudson Bay). See Peters, Check-list, 4, 1940, 111.

166 *Nyctea nyctea* becomes *Nyctea scandiaca* (Linnaeus). From *Strix scandiaca* Linnaeus, Syst. Nat., ed. 10, 1, 1758, 92. ("Habitat in Alpibus Lapponiae.") See Kelso, Biol. Leafl., no. 4, 1934, 43; Peters, Check-list, 4, 1940, 125.

167 *Surnia ulula pallasi* becomes *Surnia ulula ulula* (Linnaeus). From *Strix Ulula* Linnaeus, Syst. Nat., ed. 10, 1, 1758, 93. (Sweden.) Peters, Check-list, 4, 1940, 126.

167 *Glaucidium gnoma pinicola* is included as a synonym of *Glaucidium gnoma californicum*. See Bishop, Proc. Biol. Soc. Washington, 44, 1931, 97.

168 *Glaucidium brasilianum ridgwayi* becomes *Glaucidium brasilianum cactorum* van Rossem. Proc. Biol. Soc. Washington, 50, Feb. 23, 1937, 27. (Giant cactus grove between Guaymas and Empalme, on the coast of Sonora, México.) Additional subspecies. Southern Arizona to Nayarit, western México.

169 *Strix varia alleni* becomes *Strix varia georgica* Latham. From *Strix Georgica* Latham, Index Orn., Suppl., 1801, 15. (Southern Georgia.) See Kelso, Auk, 50, 1933, 106–107.

Page

170 Genus *Scotiaptex* included in *Strix*. See Peters, Check-list, 4, 1940, 165. The typical form becomes *Strix nebulosa nebulosa* Forster.

171 *Asio wilsonianus* becomes *Asio otus wilsonianus*, as it is considered a race of the Old World bird. See Peters, Check-list, 4, 1940, 167.

173–174 *Antrostomus* included in *Caprimulgus* Linnaeus, Syst. Nat., ed. 10, 1, 1758, 193. Type, by tautonymy, *Caprimulgus europaeus* Linnaeus. Peters, Check-list, 4, 196. The forms will stand as follows:

Caprimulgus carolinensis Gmelin.

Caprimulgus vociferus vociferus Wilson.

Caprimulgus vociferus arizonae (Brewster).

173 Subgenera *Antrostomus* and *Setochalcis* omitted. See Peters, Check-list, 4, 1940, 197.

179 *Aëronautes saxatilis sclateri* C. H. Rogers. NORTHEASTERN WHITE-THROATED SWIFT. [425a.] Auk, 56, Oct., 1939, 465. (Loveland, Larimer County, Colorado.) Additional subspecies. Montana and western South Dakota to Colorado and western Nebraska.

181 *Selasphorus alleni* becomes *Selasphorus sasin sasin* Lesson, Hist. Nat. Ois.-Mouches, 1829, tabl., 30, and 1830, 190–193, pls. 66, 67. (Near Monterey and San Francisco.) See Grinnell, Condor, 33, 1931, 77.

181 *Selasphorus sasin sedentarius* Grinnell. NON-MIGRATORY ALLEN'S HUMMINGBIRD. [434a.] *Selasphorus alleni sedentarius* Grinnell, Condor, 31, September, 1929, 226. (Smuggler's Cove, San Clemente Island, California.) Additional subspecies. San Clemente and Santa Catalina Islands, probably elsewhere in the Santa Barbara Islands.

182 *Eugenes fulgens* becomes *Eugenes fulgens aureoviridis* van Rossem, Proc. Biol. Soc. Washington, 52, Feb. 4, 1939, 7. (Chiricahua Mountains, Cochise County, Arizona.)

184 *Cynanthus latirostris* becomes *Cynanthus latirostris magicus* (Mulsant & Verreaux). From *Hylocharis magica* Mulsant and Verreaux, Ann. Soc. Linn. Lyon, 18, Jan. 31, 1872, 110. (Mazatlán, Sinaloa.) See Moore, Proc. Biol. Soc. Washington, 52, 1939, 57–60; Auk, 56, 1939, 313–314.

184 *Trogon ambiguus ambiguus* becomes *Trogon elegans canescens* van Rossem, Bull. Mus. Comp. Zoöl., 77, Dec., 1934, 441. (San Javier, Sonora, México.)

186 *Chloroceryle americana leucosticta* van Rossem and Hachisuka. WESTERN GREEN KINGFISHER. [391a.] Condor, 40, Sept. 15, 1938, 227. (Rancho La Arizona, near Saric, extreme northern Sonora, México.) Additional subspecies. Northwestern México from Nayarit to Sonora and Chihuahua, east to northern Coahuila and west-central Texas.

187 *Colaptes auratus borealis* Ridgway. BOREAL FLICKER. [412b.] Proc. Biol. Soc. Washington, 24, Feb. 24, 1911, 31 (Nulato, lower Yukon River, Alaska.) Additional subspecies. Breeding from Labrador and eastern Wyoming north to limit of trees, south in winter in Mississippi Valley, and to California and Colorado.

191 *Melanerpes erythrocephalus* becomes *Melanerpes erythrocephalus erythrocephalus* through addition of *Melanerpes erythrocephalus caurinus* Brodkorb. WESTERN RED-HEADED WOODPECKER. [406a.] Occ. Pap. Mus. Zool. Univ. Mich., no. 303, Jan. 8, 1935, 2. (Lodgepole Creek, 2 miles northwest of Chappell, Deuel County, Nebraska.) Additional subspecies. Southeastern British Columbia and central Alberta to Colorado and western Nebraska.

Page

201 ***Platypsaris aglaiae albiventris*** becomes ***Platypsaris aglaiae richmondi*** van Rossem, Proc. Biol. Soc. Washington, 43, July 18, 1930, 130. (Saric, Sonora, México.) See also van Rossem, Bull. Mus. Comp. Zoöl., 77, 1934, 446.

203 ***Tyrannus vociferans*** becomes ***Tyrannus vociferans vociferans,*** because of an extralimital subspecies. See Griscom, Bull. Mus. Comp. Zoöl., 75, 1934, 391.

203 ***Muscivora tyrannus*** becomes ***Muscivora tyrannus tyrannus,*** because of extralimital subspecies. See Zimmer, Amer. Mus. Nov., no. 962, 1937, 1.

204 ***Pitangus sulphuratus derbianus*** becomes ***Pitangus sulphuratus texanus*** van Rossem, Trans. San Diego Soc. Nat. Hist., 9, no. 17, Apr. 30, 1940, 82. (Brownsville, Texas.)

208 ***Empidonax trailli brewsteri*** and ***E. t. trailli*** become ***Empidonax traillii brewsteri*** and ***Empidonax traillii traillii,*** to conform with the original spelling.

209 ***Empidonax difficilis hellmayri*** Brodkorb. TEXAS FLYCATCHER. [464b.] Occ. Papers Mus. Zool. Univ. Michigan, no. 306, Jan. 30, 1935, 1. (Boot Spring, 6800 feet, Chisos Mountains, Brewster County, Texas.) Additional subspecies. Chisos and Guadelupe Mountains of southwestern Texas, south in winter to Durango.

211 ***Pyrocephalus rubinus flammeus*** van Rossem. WESTERN VERMILION FLYCATCHER. [471a.] Trans. San Diego Soc. Nat. Hist., 7, no. 30, May 31, 1934, 353. (Brawley, Imperial County, California.) Additional subspecies. Southeastern California, southeastern Utah and southwestern New Mexico to Nayarit.

211 ***Camptostoma imberbe*** is divided between ***Camptostoma imberbe imberbe,*** and ***Camptostoma imberbe ridgwayi*** (Brewster). Ridgway's Flycatcher. [472a.] Bull. Nutt. Orn. Club, 7, 1882, 208. (Tucson, Arizona.) Reinstated as a subspecies. Southern Arizona to Sonora. See van Rossem, Proc. Biol. Soc. Washington, 43, 1930, 129; Bull. Mus. Comp. Zoöl., 77, 1934, 451.

212 ***Otocoris alpestris enthymia*** Oberholser. SASKATCHEWAN HORNED LARK. [474p.] Proc. U. S. Nat. Mus., 24, June 9, 1902, 817. (St. Louis, Saskatchewan.) Additional subspecies. Breeding from central Saskatchewan to central Kansas, west to Wyoming and Colorado; in winter to Texas, Utah and Arizona.

213 ***Otocoris alpestris lamprochroma*** Oberholser. OREGON HORNED LARK. [474q.] Scient. Publ. Cleveland Mus. Nat. Hist., 4, no. 1, Sept. 19, 1932, 4. (Spanish Lake, east base of Hart Mountain, northern end of Warner Valley, 20 miles northeast of Adel, Oregon.) Additional subspecies. Breeding in Warner Valley, Oregon to western Nevada.

213 ***Octocoris alpestris utahensis*** Behle. GREAT SALT LAKE HORNED LARK. [474r.] Condor, 40, Mar. 15, 1938, 89. (10 mi. W. Salt Lake City Airport, Salt Lake County, Utah.) Additional subspecies. Eastern part of the Great Basin from eastern Nevada to Utah, west of the Wasatch Mountains, and southern Idaho.

217 Genus ***Chelidonaria*** becomes ***Delichon*** Moore, Proc. Zool. Soc. London, 22, 1854 (April, 1855), 104. Type, by monotypy, ***Delichon nipalensis*** Moore. See Hellmayr, Cat. Birds Amer., 8, 1935, 67. The name will therefore be ***Delichon urbica urbica*** (Linnaeus).

217 ***Hirundo erythrogaster*** becomes ***Hirundo rustica erythrogaster.*** See van Rossem Bull. Mus. Comp. Zoöl., 77, 1934, 452; Hellmayr, Cat. Birds. Amer., 8, 1935, 65; Wetmore, Proc. U. S. Nat. Mus., 84, 1937, 413–414.

218 ***Petrochelidon albifrons*** becomes ***Petrochelidon pyrrhonota*** (Vieillot). From

Page

Hirundo pyrrhonota Vieillot, Nouv. Dict. Hist. Nat., nouv. éd., 14, 1817, 519. (Paraguay.) There will be corresponding change in the specific name under the subspecies. See Hellmayr, Cat. Birds Amer., 8, 1935, 29.

219 *Progne cryptoleuca* becomes *Progne subis cryptoleuca,* as the two are considered conspecific. See Hellmayr, Cat. Birds. Amer., 8, 1935, 13.

220 *Perisoreus canadensis albescens* Peters. ALBERTA JAY. [484d.] Proc. New England Zoöl. Club, 7, May 4, 1920, 51. (Red Deer, Alberta.) Additional subspecies. Central and southern Alberta.

220 *Perisoreus canadensis bicolor* A. H. Miller. IDAHO JAY. [484e.] Trans. San Diego Soc. Nat. Hist., 7, no. 25, Oct. 6, 1933, 294. (4 miles west of Meadow Creek, elevation 3000 feet, Boundary County, Idaho.) Additional subspecies. Southern British Columbia to central Oregon and central Idaho.

220 *Perisoreus canadensis nigricapillus* Ridgway. LABRADOR JAY. [484c.] Proc. U. S. Nat. Mus., 5, 1882, p. 15. (Labrador.) Additional subspecies. See Austin, Jr., Mem. Nutt. Orn. Club, 7, 1932, 157; Hellmayr, Cat. Birds Amer., 7, 1934, 66. Labrador and Newfoundland.

220 *Perisoreus canadensis barbouri* Brooks. ANTICOSTI JAY. [484f.] Proc. New England Zoöl. Club, 7, 1920, 49. (Ellis Bay, Anticosti Island.) Hellmayr, Cat. Birds Amer., 7, 1934, 66. Anticosti Island, Quebec.

221 *Perisoreus obscurus obscurus* and *Perisoreus obscurus griseus* included as subspecies of *Perisoreus canadensis,* as the two groups are considered conspecific. See Hellmayr, Cat. Birds Amer., 7, 1934, 69.

221 *Cyanocitta cristata cristata* becomes *Cyanocitta cristata bromia* Oberholser, Auk, 38, 1921, 86. (Wooster, Wayne County, Ohio.) *Cyanocitta cristata florincola* becomes *Cyanocitta cristata cristata* (Linnaeus). See Oberholser, Auk, 1921, 83; Dept. Cons. Louisiana, Bull. 28, 1938, 419; Hellmayr, Cat. Birds Amer., 7, 1934, 60.

221 *Cyanocitta cristata cyanotephra* Sutton. WESTERN BLUE JAY. [477c.] Auk, 52, April, 1935, 176. (Kenton, Cimarron County, Oklahoma.) Additional subspecies. Eastern Colorado and Nebraska to northern Oklahoma and the Texas Panhandle.

223–224 *Aphelocoma californica* and subspecies are to be listed as races under *Aphelocoma coerulescens,* which becomes *Aphelocoma coerulescens coerulescens,* as the two are considered conspecific. See Hellmayr, Cat. Birds Amer., 7, 1934, 50–55.

224 *Aphelocoma insularis* becomes *Aphelocoma coerulescens insularis,* as it is considered conspecific with *coerulescens.* See Hellmayr, Cat. Birds Amer., 7, 1934, 53.

224 *Aphelocoma sieberi arizonae* and *A. s. couchi* become *Aphelocoma sordida arizonae* and *Aphelocoma sordida couchii.* See Hellmayr, Cat. Birds Amer., 7, 1934, 55–56.

225 *Xanthoura luxuosa glaucescens* becomes *Xanthoura yncas glaucescens.* See Hellmayr, Cat. Birds Amer., 7, 1934, 36.

229–235 The genera *Penthestes* and *Baeolophus* are united in the genus *Parus* Linnaeus, Syst. Nat., ed. 10, 1, 1758, 189. Type, by subsequent designation, *Parus major* Linnaeus (Gray, 1840). See Hellmayr, Cat. Birds. Amer., 7, 1934, 70–86. The forms given in the fourth edition of the Check-List will stand as follows:

Page

Parus atricapillus atricapillus Linnaeus.
Parus atricapillus septentrionalis Harris.
Parus atricapillus occidentalis Baird.
Parus atricapillus turneri Ridgway.
Parus carolinensis carolinensis Audubon.
Parus carolinensis impiger Bangs.
Parus carolinensis agilis Sennett.
Parus sclateri eidos (Peters).
Parus gambeli grinnelli (van Rossem).
Parus gambeli abbreviatus (Grinnell).
Parus gambeli baileyae Grinnell.
Parus gambeli atratus (Grinnell and Swarth).
Parus gambeli gambeli Ridgway.
Parus gambeli inyoensis (Grinnell).
Parus cinctus alascensis (Pražák).
Parus hudsonicus hudsonicus Forster.
Parus hudsonicus columbianus Rhoads.
Parus hudsonicus littoralis Bryant.
Parus rufescens rufescens Townsend.
Parus rufescens neglectus Ridgway.
Parus rufescens barlowi Grinnell.
Parus bicolor Linnaeus.
Parus atricristatus atricristatus Cassin.
Parus atricristatus sennetti (Ridgway).
Parus inornatus sequestratus (Grinnell and Swarth).
Parus inornatus inornatus Gambel.
Parus inornatus transpositus (Grinnell).
Parus inornatus murinus (Ridgway).
Parus inornatus cineraceus (Ridgway).
Parus inornatus ridgwayi Richmond, Proc. Biol. Soc. Washington, 15, 1902, 155 (new name for *Lophophanes inornatus griseus* Ridgway, 1882, which is preoccupied by *Parus griseus* Gmelin, 1789).
Parus wollweberi annexus Cassin.

229 *Parus atricapillus practicus* (Oberholser). APPALACHIAN CHICKADEE. [735d.] From *Penthestes atricapillus practicus* Oberholser, Proc. Biol. Soc. Washington, 50, Dec. 28, 1937, 220. (Mount Guyot, 6,500 feet altitude, Great Smoky Mountains, North Carolina.) Additional subspecies. From eastern Ohio to southwestern Pennsylvania and southward through the mountain region to North Carolina.

229 *Parus atricapillus nevadensis* (Linsdale). PALLID BLACK-CAPPED CHICKADEE. [735e.] From *Penthestes atricapillus nevadensis* Linsdale, Condor, 50, Jan. 15, 1938, 37. (Salmon River at Shoshone Creek, 5,000 feet, Elko County, Nevada.) Additional subspecies. Snake River drainage system south of Snake River in southern Idaho and northeastern Nevada.

230 *Parus carolinensis extimus* (Todd and Sutton). NORTHERN CAROLINA CHICKADEE. [736c.] From *Penthestes carolinensis extimus* Todd and Sutton, Proc. Biol. Soc. Washington, 49, July 3, 1936, 70. (Bethany, West Virginia.) Additional subspecies. New Jersey west to Missouri and south to northern North Carolina and Tennessee.

Page

234 *Parus inornatus plumbescens* (Grinnell). LEAD-COLORED PLAIN TITMOUSE. [733f.] From *Baeolophus inornatus plumbescens* Grinnell, Condor, 26, Nov. 15, 1934, 251. (Silver City, Grant County, New Mexico.) Additional subspecies. Southwestern New Mexico and Arizona south of the Colorado and Little Colorado rivers.

234 *Parus inornatus kernensis* (Grinnell and Behle). KERN BASIN PLAIN TITMOUSE. [733g.] From *Baeolophus inornatus kernensis* Grinnell and Behle, Condor, 39, Sept. 15, 1937, 226. (Rankin Ranch, 3,300 feet, Walker Basin, Kern County, California.) Additional subspecies. Drainage basin of Kern River in Kern County and southern Tulare County, Arizona.

234 *Parus inornatus zaleptus* (Oberholser). WARNER VALLEY TITMOUSE. [733h.] From *Baeolophus inornatus zaleptus* Oberholser, Scient. Publ. Cleveland Mus. Nat. Hist., 4, no. 1, Sept. 19, 1932, 7. (Rim of Warner Valley northwest of the Jacobs Ranch, Twenty Mile Creek, 9 miles south of Adel, Oregon.) Additional subspecies. Warner Valley region of southern Oregon.

235 *Auriparus flaviceps lamprocephalus* is changed to *Auriparus flaviceps flaviceps*. See Grinnell, Condor, 33, 1931, 163–168. The former *Auriparus flaviceps flaviceps* becomes in part *Auriparus flaviceps acaciarum* Grinnell. GRINNELL'S VERDIN. Condor, 33, July 18, 1931, 168. (Palm Springs, Riverside County, California.) Range southern Nevada and southwestern Utah to northern Baja California.

235 *Auriparus flaviceps ornatus* (Lawrence). EASTERN VERDIN. [746b.] From *Conirostrum ornatum* Lawrence, Ann. Lyc. Nat. Hist. New York, 5, 1852, 112, pl. 5, fig. 1. (Rio Grande, Texas.) Additional subspecies. Southern Texas, southern New Mexico and southern Arizona. See van Rossem, Trans. San Diego Soc. Nat. Hist., 6, no. 9, Aug. 30, 1930, 201.

236 *Psaltriparus minimus lloydi* becomes *Psaltriparus melanotis lloydi*. See van Rossem, Bull. Mus. Comp. Zoöl., 77, 1934, 455.

239 *Sitta pygmaea canescens* van Rossem. NEVADA NUTHATCH. [730c.] Trans. San Diego Soc. Nat. Hist., 6, no. 22, June 5, 1931, 328. (Yellow pines at 8,200 feet altitude, Lee Canyon, Charleston Mountains, Clark County, Nevada.) Additional subspecies. Charleston and Sheep Mountains, southern Nevada.

240 *Certhia familiaris leucosticta* van Rossem. NEVADA CREEPER. [726e.] Trans. San Diego Soc. Nat. Hist., 6, no. 22, June 5, 1931, 329. (Altitude 8,500 feet in the Hidden Forest, Sheep Mountains, Clark County, Nevada.) Additional subspecies. Charleston and Sheep Mountains, southern Nevada.

240 *Certhia familiaris nigrescens* Burleigh. SOUTHERN CREEPER. [726f.] Proc. Biol. Soc. Washington, 48, May 3, 1935, 62. (Mount Mitchell, North Carolina, altitude 6,600 feet.) Additional subspecies. Southern Appalachian Mountains from West Virginia to North Carolina and Tennessee.

242 *Troglodytes aëdon baldwini* Oberholser. OHIO HOUSE WREN. [722b.] *Troglodytes domesticus baldwini* Oberholser, Ohio Journ. Sci., 34, March, 1934, 90. (Gates Mills, 15 miles east of Cleveland, Cuyahoga County, Ohio.) Additional subspecies. Central Quebec, southeastern Ontario and Michigan south to Kentucky and western Virginia; in winter to southern Texas and Florida.

242 *Troglodytes aëdon parkmani* becomes *Troglodytes aëdon parkmanii* to conform with original spelling.

Page

242–244 Genus *Nannus* included in *Troglodytes*, with *Nannus hiemalis* and subspecies listed as subspecies of *Troglodytes troglodytes*. See Oberholser, Proc. U. S. Nat. Mus., 55, 1919, 224; Hellmayr, Cat. Birds Amer., 7, 1934, 216–251. The forms formerly in *Nannus* will stand as follows:

Troglodytes troglodytes hiemalis Vieillot.
Troglodytes troglodytes meligerus (Oberholser).
Troglodytes troglodytes kiskensis (Oberholser).
Troglodytes troglodytes alascensis Baird.
Troglodytes troglodytes tanagensis (Oberholser).
Troglodytes troglodytes petrophilus (Oberholser).
Troglodytes troglodytes semidiensis (Brooks).
Troglodytes troglodytes helleri (Osgood).
Troglodytes troglodytes pacificus Baird.

242 *Troglodytes troglodytes pullus* (Burleigh). SOUTHERN WINTER WREN. [722g.] *Nannus hiemalis pullus* Burleigh, Proc. Biol. Soc. Washington, 48, May 3, 1935, 61. (Mount Mitchell, North Carolina, altitude 6,500 feet.) Additional subspecies. Southern Appalachians from western Virginia to northern Georgia.

244–246 *Thryomanes bewicki bewicki* becomes *T. bewickii bewickii*, to conform with original spelling, with corresponding change under the various subspecies.

246 *Thryomanes bewickii atrestus* Oberholser. WARNER VALLEY WREN. [719l.] Scient. Publ. Cleveland Mus. Nat. Hist., 4, no. 1, September 19, 1932, 8. (Mouth of Twenty Mile Creek, Warner Valley, 9 miles south of Adel, Oregon.) Additional subspecies. Southern Oregon from the Warner Valley west to Medford and Ashland.

247 *Heleodytes brunneicapillus purus* van Rossem. SAN IGNACIO CACTUS WREN. [713c.] Trans. San Diego Soc. Nat. Hist., 6, no. 14, Nov. 28, 1930, 225. (Santa Agueda Reservoir, 11 miles west of Santa Rosalia, 27° 20′ N. on the gulf coast of Baja California, México.) Additional subspecies. Middle portion of Baja California from Dolores Bay, 25° 05′ n. lat., to Punta Prieta, 28° 56′ n. lat.

248 *Telmatodytes palustris waynei* Dingle and Sprunt. WAYNE'S MARSH WREN. [725i.] Auk, 49, Oct., 1932, 454. (Mount Pleasant, South Carolina.) Additional subspecies. Coast of North Carolina; in winter to Georgia.

249 *Cistothorus stellaris* becomes *Cistothorus platensis stellaris*. See Hellmayr, Cat. Birds Amer., 7, 1934, 123; Wetmore, Proc. U. S. Nat. Mus., 90, 1941, 509.

250 *Catherpes mexicanus punctulatus* becomes a synonym of *C. m. conspersus*. See Grinnell and Behle, Condor, 37, 1935, 247–251.

252 *Toxostoma rufum* becomes *Toxostoma rufum rufum* through recognition of *Toxostoma rufum longicauda* (Baird). WESTERN BROWN THRASHER. [705a.] From *Harporhynchus longicauda* Baird, Rep. Expl. Surv. R. R. Pac., Birds, 9, 1858, 353. (Republican River, western Kansas.) Additional subspecies. See Oberholser, Dept. Cons. Louisiana, Bull. 28, 1938, 459; Wetmore, Proc. U. S. Nat. Mus., 86, 1939, 214. Western Kansas and eastern Colorado to Alberta and Saskatchewan; in winter to Texas, Mississippi and Tennessee.

255 Genus *Arceuthornis* included in *Turdus*. *Arceuthornis musicus* becomes *Turdus musicus coburni* Sharpe. ICELAND RED-WINGED THRUSH. Bull. Brit.

Page

Orn. Club, 12, 1901, 28. (Northern Iceland.) See Hellmayr, Cat. Birds Amer., 7, 1934, 351.

256 *Turdus migratorius nigrideus* Aldrich and Nutt. BLACK-BACKED ROBIN. [716d.] Scient. Publ. Cleveland Mus. Nat. Hist., 4, no. 2, Dec. 28, 1939, 31. (Hodge Water, Avalon Peninsula, eastern Newfoundland.) Additional subspecies. Breeds in Newfoundland; in winter to eastern Canada and eastern United States.

259 *Hylocichla ustulata almae* Oberholser. WESTERN OLIVE-BACKED THRUSH. [758b.] Auk, 15, 1898, 304. (East Humboldt Mountains, Nevada.) Additional subspecies. See Oberholser, Dept. Cons. Louisiana, Bull. 28, 1938, 472; Dickey and van Rossem, Field Mus. Nat. Hist., Zool. Ser., 23, 1938, 457; Wetmore, Proc. U. S. Nat. Mus., 88, 1940, 551–552. Rocky Mountain region of the United States, west to Utah and eastern Nevada; in migration east to Indiana and Louisiana and southward.

259–260 *Hylocichla minima minima* becomes *Hylocichla minima bicknelli* Ridgway, Proc. U. S. Nat. Mus., 4, 1881, 377. (Summit of Slide Mountain, Ulster County, New York.) *Hylocichla minima aliciae* becomes *Hylocichla minima minima*. See Wallace, Proc. Bost. Soc. Nat. Hist., 41, 1939, 211–402; Wetmore, Proc. U. S. Nat. Mus., 88, 1940, 552.

260 *Sialia sialis episcopus* Oberholser. TAMAULIPAS BLUEBIRD. [766c.] Proc. Biol. Soc. Washington, 30, Feb. 21, 1917, 27. (Santa Engracia, Tamaulipas, México.) Additional subspecies. Northeastern México and the lower Rio Grande Valley, Texas.

261 *Sialia sialis grata* Bangs. FLORIDA BLUEBIRD. [766d.] Auk, 15, 1898, 182. (Miami, Florida.) Additional subspecies. Southern half of Florida.

265 *Polioptila melanura abbreviata* becomes a synonym of *Polioptila melanura margaritae*. See Hellmayr, Cat. Birds Amer., 7, 1934, 509–510.

266 *Regulus satrapa apache* Jenks. ARIZONA GOLDEN-CROWNED KINGLET. [748b.] Condor, 38, Nov. 16, 1936, 239. (McKay Peak, White Mountains, 8 miles southeast of McNary, Apache County, Arizona, at 9,100 feet altitude.) Addition subspecies. White Mountains, and adjacent ranges in east-central Arizona.

266–267 Genus *Corthylio* is included in *Regulus*. See Hellmayr, Cat. Birds Amer., 7, 1934, 512–514. The forms formerly in *Corthylio* will stands as follows:

Regulus calendula calendula (Linnaeus).
Regulus calendula cineraceus Grinnell.
Regulus calendula grinnelli Palmer.
Regulus calendula obscurus Ridgway.

269 *Anthus spinoletta pacificus* Todd. WESTERN PIPIT. [697a.] *Anthus rubescens pacificus* Todd, Proc. Biol. Soc. Washington, 48, May 3, 1935, 63. (Red Pass, 6,000 feet, British Columbia.) Additional subspecies. Breeding in mountains from Alaska to Oregon; in winter to California and México.

269 *Anthus spinoletta alticola* Todd. ROCKY MOUNTAIN PIPIT. [697b.] Proc. Biol. Soc. Washington, 48, May 3, 1935, 64. (Estes Park, Colorado.) Additional subspecies. Rocky Mountains of Colorado.

270 *Anthus spraguei* becomes *A. spragueii*, to conform with original spelling.

271 *Lanius borealis* and race become subspecies of *Lanius excubitor*, since they are considered conspecific with the Old World species. See Miller, Condor, 32, 1930, 164; Hellmayr, Cat. Birds Amer., 8, 1935, 211.

Page

272 *Lanius ludovicianus sonoriensis* A. H. Miller. SONORA SHRIKE. [622g.] Condor, 32, May 15, 1930, 155. (Whitetail Canyon, elevation 5,000 feet, Chiricahua Mountains, Cochise County, Arizona.) Additional subspecies. Colorado Desert of California and northwestern Baja California, east to southern New Mexico, south to northern Durango and Sinaloa.

272 *Lanius ludovicianus grinnelli* Oberholser. GRINNELL'S SHRIKE. [622h.] Wilson Bull., 31, 1919, 87. (San Fernando, Baja California.) Additional subspecies. Northern Baja California between 29° n. lat. and 31° 30′ n. lat., chiefly on the Pacific slope.

272 *Lanius ludovicianus mearnsi* Ridgway. MEARNS'S SHRIKE. [622i.] Proc. Biol. Soc. Washington, 16, Sept. 30, 1903, 108. (San Clemente Island, California.) Additional subspecies. San Clemente Island, California. See Hellmayr, Cat. Birds Amer., 8, 1935, 217.

273 Genus *Aethiopsar* becomes *Acridotheres* Vieillot, Anal. Nouv. Orn. Elém., 1816, 42. Type, by subsequent designation, *Paradisaea tristis* Linnaeus (Gray, 1855). See Hellmayr, Cat. Birds Amer., 8, 1935, 218. The single form will be listed as follows:

Acridotheres cristatellus cristatellus (Linnaeus).

275–276 *Vireo belli* becomes *Vireo bellii*, to conform with original spelling.

277 *Vireo solitarius cassini* becomes *Vireo solitarius cassinii*, to conform with original spelling.

278 *Vireo calidris barbatulus* becomes *Vireo altiloquus barbatulus*, as *Motacilla calidris* Linnaeus is not a recognizable name. The next available name for the species is *Muscicapa altiloqua* Vieillot. See Hellmayr, Cat. Birds Amer., 8, 1935, 146, 149.

279 *Vireo gilvus swainsoni* becomes *Vireo gilvus swainsonii*, to conform with original spelling.

279 *Vireo gilvus victoriae* Sibley. CAPE WARBLING VIREO. [627b.] Condor, 42, Sept. 16, 1940, 255. (Laguna Valley, 6,000 feet, Victoria Mountains, Baja California.) Additional subspecies. Victoria Mountains, in the Cape Region of Baja California.

279 *Vireo gilvus leucopolius* (Oberholser). OREGON WARBLING VIREO. [627c.] From *Vireosylva gilva leucopolia* Oberholser, Scient. Publ. Cleveland Mus. Nat. Hist., 4, no. 1, Sept. 19, 1932, 9. (Barley Camp, Warner Mountains, 14 miles southwest of Adel, Oregon, altitude 6,400 feet.) Additional subspecies. Central Oregon to west-central Nevada; in migration to southern California and Arizona.

280 *Limnothlypis swainsoni* becomes *Limnothlypis swainsonii*, to conform with original spelling.

282 *Vermivora bachmani* becomes *V. bachmanii*, to conform with original spelling.

283 *Vermivora celata orestera* Oberholser. ROCKY MOUNTAIN ORANGE-CROWNED WARBLER. [646c.] Auk, 22, 1905, 243. (Willis, New Mexico.) Additional subspecies. See Hellmayr, Cat. Birds Amer., 8, 1935, 340. Northern British Columbia to southeastern California and New Mexico; in winter to Baja California, Michoacán and Jalisco.

285 *Peucedramus olivaceus* becomes *Peucedramus olivaceus arizonae* W. deW. Miller and L. Griscom, Amer. Mus. Nov., no. 183, 1925, 10. (Paradise, Chiricahua Mountains, Arizona.) See Hellmayr, Cat. Birds Amer., 8, 1935, 359.

Page

286 *Dendroica aestiva morcomi* Coale. ROCKY MOUNTAIN YELLOW WARBLER. [652d.] Bull. Ridgway Orn. Club, 2, 1887, 82. (Fort Bridger, Wyoming.) Additional subspecies. See van Rossem, Trans. San Diego Soc. Nat. Hist., 6, no. 19, 1931, 283; Dickey and van Rossem, Field Mus. Nat. Hist., Zool. Ser., 23, 1938, 488. Idaho and Wyoming to Benton County, Washington, south to Inyo County, California; in winter to México and Central America.

286 *Dendroica aestiva amnicola* Batchelder. NEWFOUNDLAND YELLOW WARBLER. [652e.] Proc. New England Zoöl. Club, 6, 1918, 82. (Curslet, Newfoundland.) Additional subspecies. See Oberholser, Dept. Cons. Louisiana, Bull. 28, 1938, 530. Newfoundland to central Alaska, south to Nova Scotia and British Columbia; in winter to México.

286 *Dendroica erithachorides castaneiceps* becomes *Dendroica petechia castaneiceps*. See Hellmayr, Cat. Birds Amer., 8, 1935, 380.

287 *Dendroica coronata* becomes *Dendroica coronata coronata* by recognition of *Dendroica coronata hooveri* McGregor. ALASKA MYRTLE WARBLER. [655a.] Bull. Cooper Orn. Club, 1, 1899, 32. (Palo Alto, California.) Additional subspecies. See Oberholser, Dept. Cons. Louisiana, Bull. 28, 1938, 537; Wetmore, Proc. U. S. Nat. Mus., 93, 1943, 313. Northwestern Mackenzie to western Alaska, south to central British Columbia and central Alberta; in winter to California and Louisiana, south to Baja California and southern Veracruz.

292 *Dendroica kirtlandi* becomes *D. kirtlandii*, to conform with original spelling.

296 *Geothlypis trichas modesta* Nelson. SAN BLAS YELLOW-THROAT. [681g.] Auk, 17, 1900, 269. (San Blas, Nayarit.) Additional subspecies. See Hellmayr, Cat. Birds Amer., 8, 1935, 431. Southern Sonora to Colima. Accidental in southern Baja California (Magdalena Bay and San José Island).

296 *Geothlypis trichas chryseola* van Rossem. SONORA YELLOW-THROAT. [681h.] Condor, 32, Nov. 22, 1930, 298. (Saric, north-central Sonora.) Additional subspecies. San Pedro River, Cochise County, Arizona, to northern Chihuahua and north-central Sonora.

296 *Geothlypis trichas insperata* Van Tyne. BROWNSVILLE YELLOW-THROAT. [681i.] Occ. Papers Mus. Zool. Univ. Michigan, 255, Feb. 10, 1933, 3. (Rio Grande Delta below Brownsville, Texas.) Additional subspecies. Breeding in the Rio Grande delta below Brownsville, Texas; winter home not known.

298 *Icteria virens longicauda* becomes *Icteria virens auricollis* (Lichtenstein). From *Tanagra auricollis* Lichtenstein, Preis-Verz. Säug., Vögel, etc., Mexico, 1830, 2. (City of México.) See van Rossem, Trans. San Diego Soc. Nat. Hist., 7, no. 30, 1934, 353.

298 *Cardellina rubrifrons* becomes *Cardellina rubrifrons rubrifrons* because of an extralimital subspecies. See Hellmayr, Cat. Birds Amer., 8, 1935, 455.

302 *Sturnella magna lilianae* Oberholser. ARIZONA MEADOWLARK. [501d.] Sci. Publ. Cleveland Mus. Nat. Hist., 1, no. 4, 1930, 103, pl. 18. (Huachuca Mountains, Arizona.) Additional subspecies. Arizona and southwestern Texas to northern Sonora and Chihuahua.

306 *Icterus melanocephalus auduboni* becomes *Icterus graduacauda audubonii*. See Hellmayr, Cat. Birds Amer., 10, 1937, 143.

306 *Icterus cucullatus nelsoni* becomes *Icterus cucullatus californicus* (Lesson). From *Pendulinus californicus* Lesson, Rev. Zool., 7, 1844, 436. (California.)

Page

See Griscom, Bull. Mus. Comp. Zoöl., 75, 1934, 408; Hellmayr, Cat. Birds Amer., 10, 1937, 150.

307 *Icterus bullocki* becomes *Icterus bullockii*, to conform with original spelling.

308 *Cassidix mexicanus prosopidicola* Lowery. MESQUITE GRACKLE. [513b.] Occ. Papers Mus. Zool. Louisiana State Univ., 1, May 4, 1938, 1. (Brownsville, Cameron County, Texas.) Additional subspecies. Central Texas to Tamaulipas, Nuevo León and Coahuila.

309 *Quiscalus quiscula aglaeus* becomes *Quiscalus quiscula quiscula* (Linnaeus), and *Quiscalus quiscula quiscula* becomes *Quiscalus quiscula stonei* Chapman, Auk, 52, 1935, 25. (Lakehurst, New Jersey.) See Wayne, Auk, 35, 1918, 440; Oberholser, Auk, 36, 1919, 549; Chapman, Auk, 53, 1936, 406.

309 *Quiscalus quiscula aeneus* becomes *Quiscalus versicolor* Vieillot, Nouv. Dict. Hist. Nat., nouv. éd., 28, 1819, 488. (United States.) See Wetmore, Proc. U. S. Nat. Mus., 86, 1939, 230.

310 *Molothrus ater californicus* becomes a synonym of *Molothrus ater obscurus*. See Grinnell, Condor, 1934, 218; Willett, Pacif. Coast Avif., 21, 1933, 156.

310 *Tangavius aeneus involucratus* becomes *Tangavius aeneus aeneus*, while *Tangavius aeneus aeneus* becomes *Tangavius aeneus milleri* van Rossem, Trans. San Diego Soc. Nat. Hist., 7, no. 30, 1934, 355. (Tucson, Arizona.) See Hellmayr, Cat. Birds Amer., 10, 1937, 51–52.

311 *Piranga erythromelas* becomes *Piranga olivacea* (Gmelin). From *Tanagra olivacea* Gmelin, Syst. Nat., 1, pt. 2, 1789, 889. (New York.) See Oberholser, Auk, 36, 1919, 575–576; Hellmayr, Cat. Birds Amer., 9, 1936, 287.

313 *Pyrrhuloxia sinuata texana* becomes *Pyrrhuloxia sinuata sinuata*, while *Pyrrhuloxia sinuata sinuata* becomes *Pyrrhuloxia sinuata fulvescens* van Rossem, Trans. San Diego Soc., Nat. Hist., 7, no. 30, 1934, 356. (Fort Lowell, Arizona.) See Hellmayr, Cat. Birds Amer., 11, 1938, 75–76.

314 *Hedymeles melanocephalus melanocephalus* becomes *Hedymeles melanocephalus maculatus* (Audubon). From *Fringilla maculata* Audubon, Birds Amer., folio ed., 4, 1837, pl. 373, figs. 2–4. (Columbia River, Oregon.) *Hedymeles melanocephalus papago* becomes *Hedymeles melanocephalus melanocephalus*. See van Rossem, Auk, 49, 1932, 489; Trans. San Diego Soc. Nat. Hist., 7, no. 30, 1934, 357.

316 *Passerina versicolor dickeyae* van Rossem. SONORA VARIED BUNTING. [600b.] Trans. San Diego Soc. Nat. Hist., 7, no. 33, May 31, 1934, 369. (Chinobampo, southern Sonora, México.) Additional subspecies. Northern Sonora and western Chihuahua to Nayarit, casually to southeastern California and southern Arizona.

316 *Passerina ciris* becomes *Passerina ciris ciris* through recognition of *Passerina ciris pallidior* Mearns. WESTERN PAINTED BUNTING. [601a.] Proc. Biol. Soc. Washington, 24, Oct. 31, 1911, 217. (Fort Clark, Kinney County, Texas.) Additional subspecies. See Wetmore, Wilson Bull., 30, 1918, 57–58; Hellmayr, Cat. Birds Amer., 11, 1938, 112. Central Oklahoma to southeastern New Mexico; in winter from Veracruz to western Costa Rica.

320 *Carpodacus cassini* becomes *Carpodacus cassinii*, to conform with original spelling.

321 *Carpodacus mexicanus solitudinis* Moore. DESERT HOUSE FINCH. [519d.] Proc. Biol. Soc. Washington, 52, June 24, 1939, 107. (Fallon, Nevada.) Ad-

Page

ditional subspecies. Southern British Columbia and southern Idaho to eastern California and Nevada.

321 *Sporophila morelleti sharpei* becomes *Sporophila torqueola sharpei*. See Hellmayr, Cat. Birds Amer., 11, 1938, 188.

323 *Leucosticte griseonucha* becomes *Leucosticte tephrocotis griseonucha*. See Grinnell, Condor, 3, 1901, 21; Ridgway, U. S. Nat. Mus., Bull. 50, 1, 1901, 72; Hellmayr, Cat. Birds Amer., 11, 1938, 260.

323 *Leucosticte tephrocotis wallowa* A. H. Miller. WALLOWA ROSY FINCH. [524c.] Condor, 41, Jan. 17, 1939, 34. (18 mi. S., 2 mi. E., Lostine, 8,800 feet altitude, north face of Elkhorn Peak, Wallowa Mountains, Wallowa County, Oregon.) Additional subspecies. Breeding in Wallowa Mountains, Oregon.

325–326 *Acanthis linaria* and races are listed as subspecies of *Acanthis flammea* (Linnaeus). From *Fringilla flammea* Linnaeus, Syst. Nat., ed. 10, 1, 1758, 182. (Norrland, Sweden.) See Hartert, Vög. pal. Fauna, 1, 1903, 77–79; Hellmayr, Cat. Birds Amer., 11, 1938, 265–266. The forms will stand as follows:

Acanthis flammea flammea (Linnaeus).
Acanthis flammea holboellii (Brehm).[1]
Acanthis flammea rostrata (Coues).

328 *Loxia curvirostra benti* Griscom. BENT'S CROSSBILL. [521e.] Proc. Boston Soc. Nat. Hist., 41, Jan., 1937, 129. (Grafton, North Dakota.) Additional subspecies. Southeastern Montana and western North Dakota to Colorado; wandering to Saskatchewan, Nebraska, Iowa, Kansas, New Mexico and Arizona, more rarely to Oregon and California.

328 *Loxia curvirostra percna* becomes *Loxia curvirostra pusilla*, while *Loxia curvirostra pusilla* becomes *Loxia curvirostra minor* (Brehm). From *Crucirostra minor* Brehm, Allg. deutsche Naturhist. Zeit., 1, 1846, 532. (Eastern United States.) See van Rossem, Trans. San Diego Soc. Nat. Hist., 7, no. 30, 1934, 358–359; Griscom, Proc. Boston Soc. Nat. Hist., 41, 1937, 116, 121.

328 *Loxia curvirostra grinnelli* Griscom. GRINNELL'S CROSSBILL. [521f.] Proc. Boston Soc. Nat. Hist., 41, no. 5, Jan., 1937, 132. (Phillips, Eldorado Co., California, in east-central portion of Sierra Nevada Mountains.) Additional subspecies.[2] California, Nevada and northern Arizona; recorded in San Pedro Martír Mountains, Baja California, and on Guadelupe Island.

328 *Loxia leucoptera* becomes *Loxia leucoptera leucoptera* because of an extralimital subspecies. See Hellmayr, Cat. Birds Amer., 11, 1938, 305.

330 *Pipilo maculatus gaigei* Van Tyne and Sutton. TEXAS TOWHEE. [588i.] Misc. Publ. Mus. Zool. Univ. Michigan, 37, Aug. 24, 1937, 102. (Chisos Mountains, southeast of Boot Spring, 6,800 feet, Texas.) Additional subspecies. Brewster and Jeff Davis counties, Texas, to eastern New Mexico.

332 *Pipilo consobrinus* becomes *Pipilo maculatus consobrinus*, as the two are considered conspecific. See Hellmayr, Cat. Birds Amer., 11, 1938, 459.

332 *Pipilo fuscus eremophilus* van Rossem. ARGUS TOWHEE. [591f.] Trans. San Diego Soc. Nat. Hist., 8, no. 11, Aug. 24, 1935, 70. (Lang Spring, 5,500 feet

[1] The question of retention of Holboell's Redpoll in our list is under consideration by the Committee. The proper spelling of the subspecific name is *holboellii*.

[2] Further proposals that have been made regarding the red crossbills are still to be decided.

Page

altitude, Mountain Springs Canyon, Argus Mountains, Inyo County, California.) Additional subspecies. Argus Mountains of Inyo and San Bernardino counties, California.

332 *Pipilo fuscus texanus* van Rossem. TEXAS BROWN TOWHEE. [591g.] Trans. San Diego Soc. Nat. Hist., 7, no. 34, May 31, 1934, 371. (Kerrville, Kerr County, Texas.) Additional subspecies. Kerr County to Valverde County in southern Texas.

334 *Passerculus sandwichensis oblitus* Peters and Griscom. CHURCHILL SAVANNAH SPARROW. [542f.] Bull. Mus. Comp. Zoöl., 80, Jan., 1938, 454. (Fort Churchill, Manitoba.) Additional subspecies. West side of Hudson Bay and northern Minnesota east to western Ontario and central Quebec.

334 *Passerculus sandwichensis alaudinus* becomes *Passerculus sandwichensis anthinus* Bonaparte. From *Passerculus anthinus* Bonaparte, Compt. Rend. Acad. Sci. Paris, 37, 1853, 920. (Kadiak.) See Peters and Griscom, Bull. Mus. Comp. Zoöl., 80, 1938, 463–467.

335 *Passerculus sandwichensis bryanti* becomes *Passerculus sandwichensis alaudinus*. See van Rossem, Trans. San Diego Soc. Nat. Hist., 7, no. 29, 1933, 346; Hellmayr, Cat. Birds Amer., 11, 1938, 490.

335 *Passerculus beldingi* becomes *Passerculus sandwichensis beldingi*. See van Rossem, Trans. San Diego Soc. Nat. Hist., 6, no. 14, 1930, 217–218; Peters and Griscom, Bull. Mus. Comp. Zoöl., 80, 1938, 474.

335–336 *Passerculus rostratus* and subspecies become races of *Passerculus sandwichensis*. See van Rossem, Trans. San Diego Soc. Nat. Hist., 6, no. 14, 1930, 215–219; Hellmayr, Cat. Birds Amer., 11, 1938, 490–493.

336 *Passerculus sandwichensis anulus* Huey. SCAMMON LAGOON SPARROW. [544d.] Trans. San Diego Soc. Nat. Hist., 6, no. 10, Aug. 30, 1930, 204. (South side of entrance to Scammon Lagoon, Baja California.) Additional subspecies. See Oberholser, Sci. Publ. Cleveland Mus. Nat. Hist., 1, no. 4, 1930, 110–111; van Rossem, Trans. San Diego Soc. Nat. Hist., 6, no. 14, 1930, 217, 219. Near Scammon Lagoon, Baja California.

336 *Passerculus sandwichensis sanctorum* Ridgway. SAN BENITO SPARROW. [544c.] Proc. U. S. Nat. Mus., 5, 1883, 538. (San Benito Island, Baja California.) Restored to list. See van Rossem, Trans. San Diego Soc. Nat. Hist., 6, no. 14, 1930, 217–219.

336 *Ammodramus savannarum australis* becomes *Ammodramus savannarum pratensis* (Vieillot). From *Passerina pratensis* Vieillot, Nouv. Dict. Hist. Nat., nouv. éd., 25, 1817, 24. (New York.) See Hellmayr, Cat. Birds Amer., 11, 1938, 497.

336 *Ammodramus savannarum bimaculatus* becomes *Ammodramus savannarum perpallidus* (Coues). From *Coturniculus passerinus* var. *perpallidus* Coues, Key North Amer. Birds, 1872, 137. (Antelope Island, Great Salt Lake, Utah.) See van Rossem, Trans. San Diego Soc. Nat. Hist., 7, no. 30, 1934, 359; Hellmayr, Cat. Birds Amer., 11, 1938, 498.

337 *Ammodramus bairdi* becomes *A. bairdii*, to conform with original spelling.

337–338 *Passerherbulus henslowi* becomes *P. henslowii*, to conform with original spelling.

338 *Ammospiza caudacuta diversa* (Bishop). SOUTHERN SHARP-TAILED SPARROW. [549a.] From *Ammodramus caudacutus diversus* Bishop, Auk, 18, July,

Page

1901, 269. (Wanchese, Roanoke Island, North Carolina.) Additional subspecies. See Oberholser, Auk, 48, 1931, 610; Wetmore and Lincoln, Auk, 49, 1932, 231; Montagna, Wils. Bull., 54, 1942, 110–112. Coastal salt marshes from southern New Jersey to Chincoteague Island, Virginia; in winter to Georgia.

338 *Ammospiza caudacuta altera* Todd. JAMES BAY SPARROW. [549b.] Auk, 55, Jan., 1938, 117. (East Main, James Bay, Quebec.) Additional subspecies. See Oberholser, Dept. Cons. Louisiana, Bull. 28, 1938, 652; Peters, Ann. Carnegie Mus., 29, 1942, 205. Breeding in marshes of southern James Bay, Canada; in migration from Ohio and Massachusetts to Georgia.

339 *Ammospiza maritima pelonota* (Oberholser). SMYRNA SEASIDE SPARROW. [550g.] From *Thryospiza maritima pelonota* Oberholser, Proc. Biol. Soc. Washington, 44, Oct. 17, 1931, 126. (New Smyrna, Florida.) Additional subspecies. Coastal marshes of northeastern Florida from Nassau County to New Smyrna.

341 *Aimophila carpalis* becomes *Aimophila carpalis carpalis* because of an extralimital subspecies. See Moore, Proc. Biol. Soc. Washington, 45, 1932, 232.

342 *Aimophila ruficeps scotti* becomes *Aimophila ruficeps scottii*, to conform with original spelling.

343 *Aimophila aestivalis bachmani* becomes *Aimophila aestivalis bachmanii*, to conform with original spelling.

343 *Aimophila aestivalis illinoensis* (Ridgway). ILLINOIS SPARROW. [575b.] From *Peucaea illinoensis* Ridgway, Bull. Nutt. Orn. Club, 4, Oct., 1879, 219. (Mt. Carmel, Wabash County, Illinois.) Additional subspecies. See Sutton, Auk, 55, 1938, 508; Wetmore, Proc. U. S. Nat. Mus., 86,, 1939, 238. Southwestern Indiana and southern Illinois to southern Mississippi and eastern Texas.

343 *Aimophila cassini* becomes *A. cassinii*, to conform with original spelling.

344 *Amphispiza bilineata tortugae* van Rossem. TORTUGA SPARROW. [573c.] Trans. San Diego Soc. Nat. Hist., 6, no. 14, Nov. 28, 1930, 222. (Tortuga Island, Gulf of California, Baja California, México.) Additional subspecies. Tortuga Island, Baja California.

344 *Amphispiza belli clementeae* Ridgway. SAN CLEMENTE SPARROW. [574a.] Auk, 15, July, 1898, 230. (San Clemente Island, California.) Additional subspecies. See van Rossem, Auk, 49, 1932, 490; Hellmayr, Cat. Birds Amer., 11, 1938, 543. San Clemente Island; probably San Nicolas and Santa Barbara Islands, California.

344–345 *Amphispiza nevadensis* and races are placed under *Amphispiza belli*, since the two groups are regarded as conspecific. See Hellmayr, Cat. Birds Amer., 11, 1938, 543–544.

347 *Junco mearnsi* becomes *Junco oreganus mearnsi*. See Miller, A. H., Univ. California Publ. Zoöl., 44, 1941, 238.

350 *Spizella atrogularis caurina* A. H. Miller. SAN FRANCISCO BLACK-CHINNED SPARROW. [565b.] Condor, 31, Sept. 16, 1929, 206. (Las Trampas Peak, Contra Costa County, California.) Additional subspecies. Coast Range in Contra Costa and Alameda counties, California.

350 *Spizella atrogularis evura* Coues. ARIZONA BLACK-CHINNED SPARROW. [565c.] From *Spizella evura* Coues, Proc. Acad. Nat. Sci. Philadelphia, 18, 1866, 87. (Fort Whipple, Arizona.) Additional subspecies. See van Rossem, Condor, 37, 1935, 282–283; Hellmayr, Cat. Birds Amer., 11, 1938, 564. Southern

Page

Nevada and southwestern New Mexico to southeastern California and northern Sonora.

351 *Zonotrichia leucophrys gambeli* becomes *Zonotrichia leucophrys gambelii*, to conform with original spelling.

351 *Zonotrichia leucophrys oriantha* Oberholser. OREGON WHITE-CROWNED SPARROW. [554d.] Scient. Publ. Cleveland Mus. Nat. Hist., 4, no. 1, Sept. 19, 1932, 12. (Barley Camp, Warner Mountains, 14 miles southwest of Adel, Oregon, altitude 6,400 feet.) Additional subspecies. Warner Mountains, Oregon, to eastern California; in winter to Arizona, Chihuahua, Jalisco and Baja California.

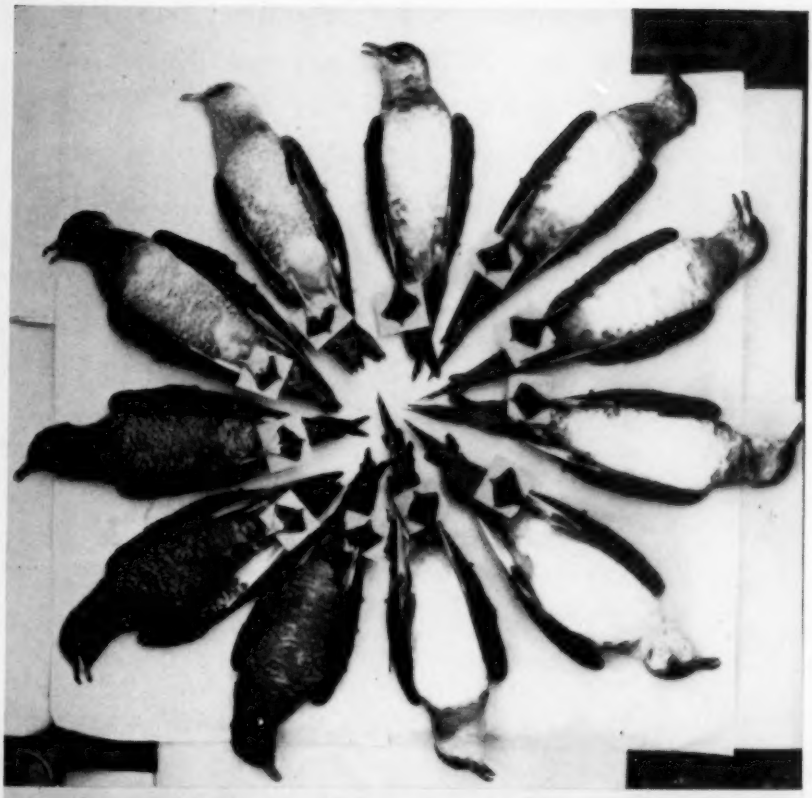
356 *Melospiza lincolni* becomes *Melospiza lincolnii*, to conform with original spelling.

356 *Melospiza georgiana* through division into two subspecies becomes *Melospiza georgiana georgiana* and *Melospiza georgiana ericrypta* Oberholser. WESTERN SWAMP SPARROW. [584a.] Dept. Cons. Louisiana, Bull. 28, 1938, 675. (Fort McMurray, Alberta.) See Wetmore, Proc. U. S. Nat. Mus., 88, 1940, 573. Alberta and Manitoba to North Dakota; in winter to Florida, Louisiana and Tamaulipas.

357 *Melospiza melodia beata* Bangs is placed in synonymy of *Melospiza melodia juddi*. The MISSISSIPPI SONG SPARROW becomes *Melospiza melodia euphonia* Wetmore, Smiths. Misc. Coll., 95, no. 17, Sept. 26, 1936, 1 (Cranberry Glades, Pocahontas County, West Virginia.) See Hellmayr, Cat. Birds Amer., 11, 1938, 597–598.

361 *Rhynchophanes mccowni* becomes *Rhynchophanes mccownii*, to conform with original spelling.

363 *Emberiza rustica* becomes *Emberiza rustica latifascia* Portenko, Auk, 47, April 17, 1930, 206. (Near Kluchi in Kamchatka.)



(Upper figure), McCABE AND RACEY: PARASITIC JAEGERS. (Lower figure), NICHOLS: A PECULIAR INJURY TO A ROBIN.

GENERAL NOTES

The family name of the Australian Honey-eaters.—The honey-eaters were known for almost one hundred years under the name Meliphagidae, based on the name of the oldest genus (*Meliphaga* Lewin, 1898, type *M. chrysotis* Lewin). Around 1920, Mathews discovered that a genus of insects had previously been named *Melophagus* (1802). He therefore rejected the name *Meliphaga*, replaced it by the next older name, *Ptilotis* (1837) and rejected the name Meliphagidae in favor of a family name based on the second oldest generic name in the family (*Melithreptus*, 1816), and called the honey-eaters Melithreptidae (Birds of Australia, 11: 237). By this action he committed a double blunder. First, it is not admissible to alter the typical genus of a family. Thus, if the name *Meliphaga* had really been preoccupied, a new family name would have had to be created with *Ptilotis* as its root. However, the name *Meliphaga* is by no means preoccupied by *Melophagus*, according to the International Rules, and the whole disturbing change of name was entirely unnecessary. By letter, I called Mr. Mathews's attention to this matter, and he corrected his error in 1931 (Ibis, ser. 13, 1: 47). Australian workers fortunately have never adopted the erroneous name Melithreptidae. It has, however, crept into a number of general works on birds, including the Zoological Record for 1941 and 1942. May this note speed the restoration of the correct name Meliphagidae for the Australian Honey-eaters.—E. MAYR, *American Museum of Natural History, New York, N. Y.*

The Parasitic Jaeger (*Stercorarius parasiticus*) (*Plate 18, upper figure*).—In 1937 we spent one long and lucky day (October 8) watching and collecting from a great concentration of these jaegers as, almost at our masthead, they preyed on Common Terns off Steveston Breakwater near Vancouver, B. C. During other years we have had less remarkable chances to watch their work in the same locality during the autumn flight. The following somewhat unrelated points of behavior and morphology are perhaps worth discussing.

(1) *The bill.*—Few writers manage to mention jaegers without emphasizing the "hawk-like" character and savage or bloodthirsty temperament, usually with special reference to the form of the bill. The latter, as compared to the pure larid type, is indeed hawk-like, designed to pierce as well as tear, and impressive enough in a dry skin. But the peculiar fact is that on fresh specimens of all ages the upper mandible is so weakly flexible that it can easily be bent up to right angles, and so soft that a needle and thread slips easily through almost any part of it! It is a question whether it could wound the least protected part of a tern, while as an effective weapon against *Larus philadelphia* or any *Rissa*, not to mention *Larus brachyrhynchus*, which we have once or twice seen attacked off the Spanish Banks, outside Vancouver Harbor, it would be quite ineffective.

(2) *The use of the feet.*—No less ridiculously ineffective are the feet. This is evident in handling 'winged' birds which, even in the ecstasy of fear, can exert only the feeblest pressure, or in watching hurt or gorged birds swim. With obviously great effort they barely propel themselves through the water at visible speed. Adaptive economy—the sacrifice of everything to one astounding faculty, agility and speed in flight—has not produced structural modifications equivalent to those of terns, swallows, or swifts, but is travelling the same road.

(3) *The predatory technique.*—Hence the beautiful and bewildering character of the jaeger's attack. When two gulls quarrel or when an eagle robs an osprey

the bodies are, for the crucial moment, in fixed relation while blows are exchanged, often with feathers flying from the point of impact. In the smothering whirl of the jaeger's assault there is no pause, feathers do not fly, there is little or no punctuation of blows. The point is that the jaeger, with its bewildering aerobatics, *smothers the flight* of the victim, renders it helpless, flightless, terrified. Psychological warfare plays a large part in bird behavior, and the jaeger's is no more deadly than the formal combats so often tied into territorial activities. Evidently the only records of jaegers' killings are of song birds or small shore birds on the arctic breeding grounds. We have never been able to detect the delivery of any blow that was not vague, indefinable, neither definitely with bill, feet, or wings, but rather mere interference with flight. The non-lethal, perhaps in large part psychological, character of the jaeger's power makes it comprehensible that, on the breeding grounds, as in several instances cited by Bent, the power might be neutralized when the smaller bird possessed the incentive of nest defense.

The average pattern of combat as we have seen it is a series of downward loops, the ensuing rises short at first, then long, like a pitchfork with alternate short tines. The jaeger's first attack, from above, forces the tern down or so interrupts its flight as to cause it to fall. During the fall the jaeger flashes around and below, halting the drop and causing a short rise. This may be oft-repeated, but more or less alternately the tern escapes farther upward. The surrender of the food morsel may occur at any point. On October 8 the fish being taken were Sand Lance (*Ammodytes personatus*) and a small herring, *Culpea pallasii*. We owe the identifications to Dr. Clements of the Nanaimo Biological Station.

(4) *The foot-markings.*—It is a long jump from such matters to the pattern of the feet during immaturity, but this, owing doubtless to its disappearance in a dried skin, seems not to have been described in detail, and its history is peculiar. The photograph shows it well. The pallid-bluish to cold flesh-colored area is at a minimum in the youngest birds represented in the autumn flight. The edge of the dark area recedes, the light area invades the foot progressively with the lighter plumages, whatever ages they may represent; whether gradually throughout the long period or by abrupt stages with the molts, no man, it is safe to say, can tell. There is promise of the achievement of an all-light adult foot and shank. On the contrary, while sporadic latero-ventral speckling still betrays departing immaturity, black scutellar pigment comes flooding back, the long correlation is broken, the color of earliest immaturity is restored, though the black is much more intense. Abrupt change to a strong and permanent color with the first prenuptial molt is, of course, the rule rather than the exception, but rarely if ever with so curious and contradictory a preliminary history. The true scutellae of the toes and the soft skin of the webbing seem to be affected alike. Whether the pallid coloration is pigmentary or merely the native hue of blood and tissue we do not know, but the latter seems probable, in which case we have the phenomenon of a long-continued withdrawal of the pigmentary frontier during the early years, followed by a total invasion on the threshold of maturity.—T. T. McCabe, *Berkeley, California;* Kenneth Racey, *Vancouver, B. C.*

A peculiar injury to a Robin (*Plate 18, lower figure*).—The mortality among birds from accidental impact is probably very large, for whenever such delicate structures are in any way seriously damaged there seems but little chance for their survival. It is a matter of considerable surprise, therefore, when we find a bird which has

apparently been severely injured and is still able to survive and to carry on its normal pattern of activities despite a serious handicap.

In early April of 1941, a male Robin, *Turdus migratorius*, appeared in the yard at the home of Dr. M. E. Wigham in Saddle River, N. J., and it was at once noted that the body of this bird was pierced by a stick. The Robin established himself there and was almost continually in view at close range so that a detailed study with binoculars was an easy matter.

The stick appeared to enter the back at the left of the backbone and behind the heart and the lungs, penetrating the body in the area of the stomach and kidneys, but just enough to one side to miss them. It would seem that the stick must lie against the left peritoneal wall, as it could hardly go anywhere else without damaging a vital organ. The stick described approximately a right angle with the backbone, and came out of the breast probably through the lower ribs. The projection from the breast seemed to be about a quarter inch closer to the median line than at its point of entry in the back.

About two inches of the stick projected from the back of the bird and about an inch protruded from the breast. The stick was a straight twig about three-sixteenths of an inch in diameter and had a slightly roughened bark attached.

The Robin conducted himself as a normal bird would. He mated and in early May a family of four young was hatched. At this time he seemed to be a bit awkward in his movements on the ground; in the air his flight was rather deliberate and quite heavy but otherwise normal. He frequently took long flights deep into a nearby field in search of food for the young, returning every few minutes to feed them or perhaps to drive another bird from the vicinity of the nest with all of the energy of a normal Robin.

When the young of the first brood were able to take care of themselves, another nest was built in an adjoining tree and, in early July, a second brood was hatched. The bird still showed no serious restriction in his actions—feeding young, singing, driving intruding birds from the territory.

In late July, Dr. Wigham left on a long vacation, the house was closed, and no further observations were made. At that time, however, the Robin was as active as ever.

There was no surprise felt when the Robin did not reappear in the spring of 1942, for it was almost unthinkable that he could have either undertaken a long migration or could have survived a winter in the north. It was with amazement, therefore, that, in April, 1943, the Robin was again seen on Dr. Wigham's lawn, still carrying the stick. The stick seemed to be a bit shorter where it protruded from the back and both ends of it were rather frayed and brushed out, but otherwise conditions were the same. It was seen at irregular intervals for two or three weeks and then disappeared and was not again found although a search was made in the vicinity.

Through the kindness of Mr. Edward B. Lang, the accompanying photograph (Plate 18, lower figure) was taken which shows the size and position of the twig. CHARLES K. NICHOLS, *American Museum of Natural History, New York, N. Y.*

Bald Eagles nesting in Illinois.—There are no recently published records of the Bald Eagle nesting in Illinois. According to C. T. Black (letter, January 8, 1942), the last nesting record of this species in the state was in 1915, when a nest was found in Piatt County. However, these birds formerly nested in the early 1900's and earlier in Cook, Lake, Marshall, and Putnam counties.

In late August, 1934, Benjamin T. Gault and the writer saw an immature Bald Eagle and a large nest along the Illinois River above Henry, Illinois. Thinking that perhaps this nest, in the top of a tall cottonwood and estimated at six feet in diameter, was an eagle's, the writer revisited the site in April, 1935. No evidence of occupancy was found at that time; nor was the nest used by any avian species up to the time the tree fell in 1940. However, in late August of 1936 and 1937, I again saw two young Bald Eagles along the Illinois River near Henry. Thus, there seems to be a strong possibility that this species nested in the Henry region during those years. This is further strengthened by the fact that Mr. Joe B. Davidson, of the U. S. Soil Conservation Service, reported a Bald Eagle's nest on the farm of George Mathis, near Henry, in 1935. Mr. Mathis said that the nest was used by the eagles each year until 1940.

For a number of years there has been a Bald Eagle's nest on the Horseshoe Lake state game preserve in Alexander County, Illinois, north of Cairo. Arthur S. Hawkins, of the Illinois Natural History Survey, told me about the nest on February 12, 1941. The next day Robert E. Hesselschwerdt and the writer visited the tree and Hesselschwerdt filmed the male excitedly flying back and forth over the nest. Pounding on the base of the tree failed to dislodge the female from the nest even though she could be seen on it.

Bald Eagles nested there again in 1942 and 1943, according to Dr. William H. Elder of the Illinois Natural History Survey. In 1943, Dr. Elder reported that an eagle was first seen carrying a stick to the nest on January 2. On February 4, the female incubated throughout the day up to 4 P. M. By April 9, there were two young, almost fully grown, in the nest.

A Bald Eagle's nest was reported by Monroe and Mengel directly across the Mississippi River from Cairo, Illinois, in Ballard County, Kentucky (Wilson Bulletin, 53, no. 3: 196, 1941). This is only about 25 miles from the Horseshoe Lake nest.—Frank C. Bellrose, Jr., *Illinois Natural History Survey, Urbana, Illinois.*

American Avocet in Illinois.—There are only three previous records of the American Avocet (*Recurvirostra americana*) in Illinois. Stoddard reported (Auk, vol. 38, no. 1: 110, 1921) that two were taken at Chicago, May 5, 1889. Bent (Life Histories of North American Shore Birds, Part I) states that two were killed in St. Clair County, October 28, 1878. Musselman recorded (Auk, 53, no. 3: 328, 1936) that two were taken near Quincy on October 28, 1935. On September 18, 1943, Leo Borgelt, U. S. Game Agent, and the writer saw an American Avocet in the West Matanzas drainage district, two miles south of Havana. Although we pursued the bird for several hours, we were unable to collect it. During that time, the Avocet was seen at close range many time with 8 x 40 binoculars. It was again seen at the same place on September 20, with a 27-power spotting 'scope.—Frank C. Bellrose, Jr., *Illinois Natural History Survey, Urbana, Illinois.*

Western Grebe (*Aechmophorus occidentalis*) in Illinois.—Records of this straggler from the west are almost unknown in Illinois. One definite record was of a bird at Swan Lake, Putnam County, on December 27, 1921, recorded by S. S. Gregory (Auk, 40: 526, 1923). On October 21, 1941, the writers saw a Western Grebe swimming in Beebe Lake, near Banner, Fulton County, Illinois. This grebe was under observation for a half hour with 8 x 10 binoculars and a 27-power Bausch & Lomb spotting 'scope. All markings were clearly visible, and its size could readily be compared with nearby Coots. The junior author is well acquainted

with this species, having seen it many times in Utah.—Frank C. Bellrose, Jr., and Jessop B. Low, *Illinois Natural History Survey, Urbana, Illinois.*

Sycamore Warbler in Ontario.—On May 20, 1943, in Stamford Township, near Niagara Falls, Ontario, toward dusk of a cool, wet evening, my eight-year-old son, Peter, and I saw a warbler fly from a forsythia bush under the front window of my house to an adjacent spirea shrub. The warbler appeared to be cold, hungry, and tired, and allowed a very close approach—so close, in fact, that we were both peering into the very moderate-sized shrub with our faces pressed against the outer twigs while the warbler climbed and searched for insects about the central stems. It acted somewhat like a Black and White Warbler in its methods of creeping and climbing about the bush, but it was not that species for it was not marked all over like it and, moreover, it very distinctly had a clear yellow throat. The bird seemed to combine somewhat the appearance of a washed-out female Blackburnian Warbler with the habits of a Black and White Warbler and some of the side markings, albeit paler, of that latter strikingly marked species. The clear, rather pale yellow was seen, at a distance of only a foot or two, to be definitely confined to the throat area, and did not extend at all over the eyes. The distribution of coloring, the creeping habits, and other general characters forced me, after some puzzling, to the conclusion that this bird was a Sycamore Warbler (*Dendroica dominica albilora* Ridgway), the northern representative of the Yellow-throated Warbler (*Dendroica d. dominica*), and probably a female.

In connection with this sight record, possibly a first for Ontario, it is perhaps of interest and significance to mention that about two months after making the entry in my diary from which the above notes were prepared, I received a copy of the July number of the Buffalo Ornithological Society's mimeographed journal, 'The Prothonotary,' in which was mentioned, under an item dated May 30 (Seeber), the first record of a Sycamore Warbler in the Buffalo area. The center of the city of Buffalo, N. Y., would be just about twenty miles southeast of the point near Niagara Falls, Ontario, where I made my observation ten days earlier.—R. W. Sheppard, *1805 Mouland Avenue, Niagara Falls, Ontario.*

The European Starling in central Saskatchewan.—On May 24, 1940, while on a bird trip to Quill Lake, Saskatchewan, I was puzzled for a few minutes by a small blackbird with a yellow bill and bobbed tail which was flying about the grain elevators in the village of Dafoe at the southwest corner of the lake. I had never seen a Starling before nor had I read anything about its appearance into this province. One of the chaps with me who had been to England some years previously immediately recognized it to be what I had thought it. The next spring I visited this area again about the same time and found the Starlings still present; and, from questioning the men in the elevator, found that they had remained all winter.

On June 13, 1942, I was in the village of Duck Lake, Sask., about forty miles south of Prince Albert and one hundred and fifty miles northwest of the village of Dafoe, when to my surprise I found Starlings nesting in one of the grain elevators. I am sure that they had not been here during previous seasons as I visit this district at least once during the summer. On April 30, 1943, I saw a single female at the local stockyards and another chap reported to me that he had seen three in the same vicinity the day previous.

During the four seasons, 1940–1943, this species has spread a distance northwest-

ward of about one hundred and seventy miles, after a winter that was excessively hard—very cold and heavy snows. Prince Albert is just inside the Canadian Zone and it will be interesting to watch the reaction of the Starling to the forest areas to the north.—O. C. Furniss, *Prince Albert, Saskatchewan.*

A Sparrow Hawk in Costa Rica in July.—On June 24, 1943, while passing through a pasture in this vicinity—the upper Térraba Valley of Costa Rica—I heard the unmistakable call of the Sparrow Hawk (*Cerchneis sparveria*). The following day, in the same pasture, I enjoyed an excellent view of the bird. It was in exceptionally dull plumage, resembling an immature female, with the head markings very pale, the back and wing-coverts dull grayish brown with dusky bars. What at once took my eye was its nearly tailless state. Its tail feathers were just growing out, and the longest appeared to be only an inch or two in length. Despite this handicap, it flew well. I saw it again on July 2, but after that met it no more, although it had been in the pasture behind my house and I kept watch for it.

Races of the Sparrow Hawk nest in northern Central America and again in northern South America; but, strangely enough, the species is not known as a breeding bird in the intermediate territory of Costa Rica. In this country it is a common and widespread winter visitant from the north, arriving about the middle of October (once recorded on September 29) and lingering until early April (latest previous record April 15). In 1943, I saw the last in this vicinity on April 1, then no more until I met the tailless bird on June 24. I think it likely that the same physiological derangement that caused the bird to be without a normally developed tail at this date, was also responsible for its failure to migrate. I do not believe that accidental loss of the tail caused it to remain behind; for had it been deprived of its tail feathers in early April, at the time it should have departed northward, a normal bird—if I may rely upon observations on other species—would have produced a new tail in less than two months.—Alexander F. Skutch, *Quizarrá de Pérez Zeledón, Costa Rica.*

Barn Swallow in Costa Rica in July.—On the evening of July 5, 1939, I embarked at Puntarenas, Costa Rica, on the freighter 'Cuzco,' for Guayaquil. Coming up on deck when it was nearly dark, I noticed that about thirty or forty swallows were fluttering about the harbor beacon, which was mounted on a steel tower about forty feet high, standing at the end of the long pier, close beside the point at which the ship was unloading. Soon the birds settled down on the steel railing that surrounded the light. The beacon was now sending its fleeting red flashes over the broad expanse of the Gulf of Nicoya; and from time to time a swallow, quitting its perch upon the railing, would flutter against the glass cylinder that enclosed the lighting apparatus. The birds chirped much as they settled down to roost; and from the quality of their voices, as well as their size, I took the majority to be Grey-breasted Martins (*Progne chalybea*). But the light of day was too far spent when I found them, and the light of the beacon too dull and fugitive to allow positive visual recognition of their kind; and before morning the ship sailed. Among these birds was one Barn Swallow (*Hirundo erythrogaster*), unmistakable when its long, pointed tail feathers were viewed in silhouette against the sky. No other swallow known to occur in Costa Rica has a deeply forked tail of this kind, nor any other bird of the same size and habits. The swallows slept in surroundings which would have seemed to make slumber impossible. Many people were walking and talking beneath them; a ship was unloading close by;

while a steam locomotive, noisily shunting freight cars, from time to time enveloped the birds in clouds of sulphurous smoke. While a few tucked their heads back among their feathers, the majority kept their heads exposed; and I could see the eyes of some gleaming in the flashes of the beacon, even after night was well advanced.

The Barn Swallow is known in Costa Rica chiefly as a passage migrant, appearing early in September (earliest record September 3) and continuing to pass southward in numbers until early October. Its status as a winter resident is doubtful; but it reappears in late February, becomes more abundant in March, in April passes through in countless numbers, and continues to migrate in decreasing numbers well into May. My latest date—save the one recorded above—is May 29, 1940. In 1939, I saw innumerable Barn Swallows in southern Costa Rica in April and early May, but none after May 23 until I met the one on the beacon-tower at Puntarenas. The record seems of interest because this is the only passerine bird, of a species known to breed only north of the Isthmus of Tehuantepec, which in a dozen seasons in the field I have seen in Central America at a date which suggests that it would not migrate to its nesting area during the season in question. Instances of failure to migrate from the winter home have been recorded for shorebirds and other non-passerines, but must be extremely rare for passerine species. Possibly the scarcity of records of this kind is caused by the fewness of observers, and the smallness of most passerine birds.—ALEXANDER F. SKUTCH, *Quizarrá de Pérez Zeledón, Costa Rica.*

Glossy Ibis near Toledo, Ohio.—On May 30, 1943, Harold F. Mayfield and I saw three adult Glossy Ibises (*Plegadis f. falcinellus*) in a flooded field adjoining the Cedar Point Marsh, Jerusalem Township, Lucas County, Ohio. The birds were viewed at close range and carefully distinguished from the White-faced Glossy Ibis (*Plegadis guarauna*). Although no specimen was taken, neither of us has the slightest doubt as to the correctness of our identification. This record seems to be the second for the Glossy Ibis in Ohio. In his 'Report on the Birds of Ohio' (1879), Dr. J. M. Wheaton quotes Dr. Kirtland to the effect that two were seen in 1848 near Fairport, Lake County, one of which, a male, was shot by Mr. Prugen and forwarded to him. At the time of Dr. Kirtland's statement, the mounted specimen had been placed in the cabinet of Natural History at the Cleveland Medical College.—LOUIS W. CAMPBELL, *Toledo, Ohio.*

Connecticut records.—This is to report two unusual records for Connecticut, both of which came to light on anniversaries, as it were. On October 7, 1943, Mrs. William Curtis of New Haven gave the Peabody Museum of Natural History an adult White Pelican (*Pelecanus erythrorhynchos*), having found it somewhat cumbersome in her apartment. It proves to have been shot by her father, Reuben D. H. Hill, at Branford, Conn., on October 15, 1928, almost exactly fifteen years before the bird came to our attention. A boy who had discovered it on the water near shore told Mr. Hill of the "big goose." When shot, the pelican was retrieved from the water by means of a rowboat. Mr. Hill sent it to John Oed, a taxidermist in New Haven, to be mounted. Evidently no printed record appeared at that time, although this is, as far as I can learn, the first and only White Pelican known to have been seen in Connecticut. It is fairly well mounted and preserved (Catalogue No. 13510, Peabody Museum of Natural History).

The other bird is a female of the European Corn Crake (*Crex crex*) shot October

18, 1943, about a mile east of the Housatonic River in the town of Orange, by Mr. Donald Page, nephew of the late George Bird Grinnell. When received at the Museum it was in perfect condition except for a small bare spot on one side of the neck. The skin bears the catalogue number 13511. The bird was flushed by Mr. Page and a companion in typical pheasant cover of goldenrod and weeds on a knoll about 200 yards wide rising from Sora marshes on two sides.

As far as we know, this constitutes the second record for Connecticut. The first Corn Crake was taken at Saybrook by the Hon. John N. Clark on October 20, 1887, making an interval lacking two days of fifty-six years. One can but wonder how many others may have escaped attention, and especially by what route a bird of such comparatively weak flight reached Connecticut. Forbush ('Birds of Massachusetts and Other New England States,' 1: 364, 1925) reports the species as having been "taken and *recorded* 14 times on this side of the Atlantic, to say nothing of Greenland records," and surmises that it reaches New England (three records from Maine, Rhode Island, and Connecticut) by way of Greenland. But, rejecting transportation by man, the bird's appearance in Bermuda on October 25, 1847, indicates an ability to span wide oceanic distances.

The last record for North America seems to have been from Dennisville, New Jersey, November 11, 1905. It may be added that, with the exception of a bird taken in June, 1856, near Bridgeton, New Jersey, all the Corn Crakes recorded sou'h of the St. Lawrence River have appeared in autumn (August 15 to November 28). In only one instance, at Falmouth, Maine, where two were shot on October 14, 1889, was more than one crake seen.

Two errors have crept into Mr. Bent's paragraph on distribution (U. S. Nat. Mus. Bull. 135: 339); the date of the earlier Connecticut bird was 1887 instead of 1871, and the Bridgeton, New Jersey, record should be June, 1856, according to Stone.—STANLEY C. BALL, *Peabody Museum of Natural History, Yale University, New Haven, Connecticut.*

Two new records from Newfoundland Labrador.—During investigations of birds in Newfoundland we spent the last three days of June, 1943, in southern Labrador. We visited Chateau Bay and St. Peter's Bay, both on the north shore of the Strait of Belle Isle. Among the specimens we collected were two birds one of which was not previously recorded from Newfoundland Labrador while the other has demonstrated the necessity of altering an accepted subspecific assignment.

YELLOW-BELLIED FLYCATCHER (*Empidonax flaviventris*). A male in breeding condition (original number 424) was collected at Pitts Arm, Chateau Bay, Labrador, on June 29. Austin ('Birds of Newfoundland Labrador,' Mem. Nuttall Ornith. Club, 7: 229, 1932) does not record any species of flycatcher from Labrador.

BLACK-BACKED ROBIN (*Turdus migratorius nigrideus*). This Newfoundland form is represented by a female (original number 426) which was shot on a nest of four partly incubated eggs at Pitts Arm, Chateau Bay, Labrador, on June 29. This specimen agrees with our series of seventeen robins taken in Newfoundland during the past two summers. Since this race was described (by Aldrich and Nutt, Sci. Publ. Cleveland Mus. Nat. Hist., 4: 2, 1939), it has not been known that Labrador birds were assignable to it. Austin (*tom. cit.*: 169) says: "The robin of Labrador, at the northern extreme of its range, is certainly larger and darker than more southern birds, but I am unable to differentiate between a series of ten breeding specimens from Labrador and a much larger series from New England sharply enough to warrant further separation." Mr. James L. Peters, however, has ex-

amined six of Austin's specimens now in the Museum of Comparative Zoölogy and finds that " . . . they are the same as the Newfoundland form." He further states (in correspondence) that *nigrideus* is a "perfectly valid race whose characters are best developed in the Avalon peninsula of Newfoundland. It also ranges up the coast of Labrador." Austin's specimens, examined by J. L. Peters, are: female, Cartwright, July 16, 1928; juvenile, Mannack's Island, July 20, 1928; female and juvenile female, Hopedale, July 25, 1928; and two males, Nain Bay, August 4, 1928.—HAROLD S. PETERS, *Fish and Wildlife Service, Charleston, South Carolina,* and THOMAS D. BURLEIGH, *Fish and Wildlife Service, Baton Rouge, Louisiana.*

The Blue-winged Teal at Sea.—On November 27, 1940, I was on a steamer coming north through the Strait of Yucatán between Quintana Roo and Cuba. About four o'clock in the afternoon, while we were out of sight of land, a band of a dozen Blue-winged Teals (*Querquedula discors*) passed near at hand, travelling only a few feet above the water toward Cuba. The flock of ducks flew directly east with no hesitation as to their course. This line of flight was, to me, unexpected as I have been accustomed to think of it as one followed by some species through Florida and Cuba to the west in fall and in the reverse direction in spring. It seems strange that in November these ducks should have been moving confidently eastward at a time when the migratory impulse might be supposed to carry the flight in general in the opposite direction. I have been led to ponder whether this cross flight line between the coast of México and the West Indies may not be used by migrating birds of various species more extensively than has been supposed. It would afford an easy, mainly overland route for birds from the western half of North America around the Gulf of Mexico to the West Indies with only a short passage across open water.—ALEXANDER WETMORE, *U. S. National Museum, Washington, D. C.*

Extension of breeding range of the Western Burrowing Owl in Saskatchewan.—When I arrived in the northwestern farming area of Saskatchewan in mid-July, 1943, I found my neighbors, Rufus and Gordon Brooks, interested in a strange bird they had found nesting on their wild-hay land about two and one-half miles south east of Livelong. From their description of the bird and its nesting site and den, it seemed very probable that it was a Burrowing Owl. It was, however, a new bird to them in that neighborhood and as I had had over twenty years summer residence and knowledge of the bird life of that territory without having seen this species there, I was interested to learn what it might be. A trip to the locality proved the nest to be that of a Burrowing Owl. It was in what appeared to be an old, unused badger or coyote den, upon a slight elevation above the broad, wild meadow which sloped away some miles southwestward. Here, during the month of August, an opportunity was afforded to observe the birds. Five young and two old birds comprised the family. At first, when too closely approached, the little ones would scurry down the burrow quite out of sight. Toward the end of the month they had grown sufficiently to wing away to neighboring knolls when they wished to do so.

On returning home and looking up the distribution of these birds, it appeared that this observation might furnish interesting data upon the northern extension of their nesting range; existing records are much farther to the southward. The Western Burrowing Owl (*Speotyto cunicularia hypugaea*) appears to have its northern nesting range recorded as follows. Macoun ('Catalogue of Canadian

Birds': 317, 1909) says: "I found the bird breeding in Saskatchewan at Rush Lake, June 12th, 1891." Previously he says: "I did not, however, note them west between Portage and Edmonton along the line of the G. T. P. Ry., I presume because our course lay too far north." Taverner ('Birds of Canada': 26, 1934) gives the distribution in Saskatchewan as "north to about the Canadian Pacific main line in the three Prairie Provinces." Bent (U. S. National Museum, Bulletin 170: 394, 1938) gives the breeding range in Alberta and Saskatchewan as "southern Saskatchewan (Many Island Lake, Crane Lake, Rush Lake, Moosejaw and Indian Head)." These records lie south of the south fork of the Saskatchewan River, while Livelong is on the north side of the north fork of the same river. Roughly speaking, the two areas are about 225 miles apart from north to south.

The immediate Livelong area was originally an old buffalo country and until twenty or thirty years ago was a cattle range covered with wild grasses and 'bluffs' or clumps of trembling aspen (*Populus tremuloides*) in about equal proportions. This mixed tree and grass land is spoken of there as 'park country.' The area upon which the owl nest was found was on the border of an old lake bottom which has been grass-covered for many years and with the settlement of the country must have become attractive to these birds.—WILLIAM T. SHAW, *1002 Cambridge Avenue, Fresno, California.*

Forster's Tern in central-western Ohio.—On May 28, 1941, I identified a bird at Lake St. Marys, Auglaize County, Ohio, as the Forster's Tern (*Sterna forsteri*) but did not obtain the specimen. On May 5, 1943, a large number of terns were seen feeding on the minnows in the ponds at State Fish Farm No. 1 at the east end of Lake St. Marys. In an attempt to stop this pillage, five birds were shot, two Forster's and three Common Terns (*Sterna h. hirundo*). Later, on May 22, two of three terns killed proved to be Forster's. A skin was prepared by F. B. Magill of one of the Forster's Terns taken on May 5, 1943, and this is deposited as specimen no. 7707 in the Ohio State Museum at Columbus. Mr. Edward S. Thomas, Curator of Natural History, informs me that it is the first spring specimen from Ohio in the collections of that institution.

I am not aware of a published record of the Forster's Tern for central-western Ohio or of a recent spring record for the state, although Campbell and Trautman (Auk, 53: 213–214, 1936) and Campbell (Bull. Toledo Mus. Sci., 1: 87–88, 1940) record the presence of this bird in the Erie Marsh in Michigan on May 27, 1934.

Its presence in other parts of Ohio in summer and fall have been recorded by Wheaton (Geol. Surv. Ohio 4: 560, 1882), Jones (Ohio Acad. Sci., Special Paper, 6: 31–32, 1903), Dawson ('Birds of Ohio,' 2: 558, 1903), and Trautman (Auk, 45: 200, 1928).—CLARENCE F. CLARK, *Ohio Division of Conservation and Natural Resources, St. Marys, Ohio.*

Yellow Rail in Rice County, Minnesota.—While walking through a hummocky stretch of wet meadowland near Nerstrand, Rice County, Minnesota, on the morning of September 26, 1943, we chanced to flush a Yellow Rail (*Coturnicops noveboracensis*) from the grass. The bird fluttered up almost underfoot and flew about forty yards. At first it looked like a Sora Rail (*Porzana carolina*), but when it changed its course the buffy tone of its foreparts became noticeable; and when, a bit later, it threw its feet forward preparatory to alighting, the white of its secondaries showed very clearly. At this instant it was collected. It proved to be an immature female. It was rather fat and weighed 45.2 grams, and the stomach con-

tained the following food material: 21 small seeds; the soft bodies of two small snails with pieces of shell still attached; and seven dipterous larvae approximately 15 mm. in length, one not too disintegrated to be recognizable as *Stratiomyia* sp. The Yellow Rail specimen is now preserved as a skin in the Carleton College collection.

In our many years of field experience, this is the first time either of us has seen a Yellow Rail in full flight. Sutton found it to be common locally in the Last Mountain Lake district of Saskatchewan in the summer of 1932, but saw it only twice in that region—once when a bird jumped from the grass but dropped back without fully spreading its wings; again when his companion, Albert C. Lloyd, fell on one and captured it alive. The Yellow Rail has been recorded several times in Minnesota but not heretofore in Rice County, and the migration date is thought to be of interest.—GEORGE MIKSCH SUTTON, *Cornell University, Ithaca, New York,* AND OLIN SEWALL PETTINGILL, JR., *Carleton College, Northfield, Minnesota.*

A specimen of the Western Yellow-throat from Michigan.—On November 29, 1942, I collected an immature female Yellow-throat on North Cape, three miles southeast of Erie, Michigan. My friend, Louis W. Campbell, who found the bird, had seen it first in the same clump of brush near the shore of Lake Erie on November 14. It was snowing and there was already three inches of snow on the ground when I collected the warbler. The bird proved to be very fat and weighed 12.1 grams. I identified the specimen as *Geothlypis trichas occidentalis.* Ludlow Griscom and Alden H. Miller have kindly compared it with the series in their museums and independently reached the same conclusion. The date of this occurrence is a month later than any recorded for a Yellow-throat in Michigan. There is no previous authentic record for this subspecies in Michigan (see N. A. Wood, Wilson Bulletin, 46: 118, 1934).—JOSSELYN VAN TYNE, *University of Michigan Museum of Zoology, Ann Arbor, Michigan.*

Notes from South Carolina.—The period from October 5 to 15, 1943, was spent in observation of the extraordinarily rich bird life on Bull's Island in the Cape Romain National Wildlife Refuge. Certain species were noted which are very unusual, or previously unknown, in South Carolina.

ROSEATE SPOONBILL (*Ajaia ajaja*).—One adult was found by Bull and Eisenmann on Summerhouse Pond (fresh water) on October 5, and was seen daily thereafter up to and including October 14, always in the company of the Wood Ibises. When the bird was called to the attention of Mr. W. L. Hills, the resident warden, he recollected having seen a pink bird flying over the same pond on September 29, which he had not definitely identified at the time because he did not then have his binoculars. To Mr. E. B. Chamberlain of the Charleston Museum, we are indebted for the following information as to the Spoonbill's status in South Carolina. Even in the early nineteenth century it was at most of casual occurrence in that state. Audubon quotes John Bachman as saying that he had observed only three individuals in the course of twenty years. During the latter part of the last century there were three or four birds noted, the last of which was a specimen taken in the autumn of 1885 near Yemassee (Wayne, 'Birds of South Carolina': 25, 1910). The only previous report for the twentieth century was a bird seen on September 12, 1935, in a marsh on Seewee Bay, on the mainland nearly opposite Bull's Island (Auk, 53: 75, 1936).

ARKANSAS KINGBIRD (*Tyrannus verticalis*).—On October 13, Eisenmann and Ko-

morowski noted an individual of this species which flew in and perched on a small live oak on the check-bank of Summerhouse Pond. Until recently this species wat totally unknown in South Carolina. Mr. Chamberlain states it was first recorded on December 16, 1913 (Auk, 31: 248, 1914), and not noted again until November 1, 1937, when a bird was seen on Bull's Island (Auk, 55: 536, 1938). Since then there have been reports in 1938, 1939, and 1941.

LARK SPARROW (*Chondestes grammacus*).—On October 12, Eisenmann and Komorowski observed a bird preening on the same live oak where the Arkansas Kingbird was seen next day. The tree was about twelve feet high and adjacent to extensive growth of foxtail grass. Though the bird was in immature plumage, it was immediately recognized as a Lark Sparrow from its characteristic head pattern and from the tail, which was graduated and black except for the brown central feathers and which had the white tips extending up the sides of the outer feathers. A check of available literature that night indicated that the species was unrecorded in South Carolina. The next day, while we were watching the Arkansas Kingbird, the Lark Sparrow flew to the same tree and we were able to verify our observation. Again on October 14 and 15, the bird was seen in the same live oak, flying in for a few minutes of preening. We were able to point out the bird to Mr. Hills. Although the Lark Sparrow has not been previously noted in South Carolina (Chamberlain, Seasonal List of South Carolina Birds, 1936), its occurrence is not surprising since it is of casual occurrence in many parts of the Atlantic seaboard and has been taken in North Carolina and Florida (A. O. U. Check-List, fourth ed.: 341, 1931).—JOHN L. BULL, JR., *New Rochelle, N. Y.;* EUGENE EISENMANN, *New York, N. Y.;* AND GEORGE KOMOROWSKI, *New York, N. Y.*

Red-breasted Merganser devoured by angler fish.—Twenty-six hours after its capture, five miles east-southeast of Watch Hill, Rhode Island, on November 21, 1943, a 47-pound angler or goosefish (*Lophius piscatorius*) was dissected in the laboratory of the Bingham Oceanographic Foundation in the Peabody Museum of Natural History. Amongst a mass of fishes found in its stomach was an adult Red-breasted Merganser (*Mergus serrator*). The only evidence of digestive action was a slight disintegration of the eyelids. The feet were in perfect condition, and the bird was made up as an excellent skin.

One may assume that the fish was caught very soon after it swallowed the merganser. Nevertheless, even in a dead fish, digestion might have been expected to disintegrate the epidermis of legs and feet during the 26-hour period. Undoubtedly the copious mucus which matted the feathers together thereby provided additional protection to the general surface of the skin.

Unless entrapped during the descent or ascent of the net, the fish was caught while on the bottom in 19 meters of water, at which depth the 80-foot otter trawl was dragged for two hours. The fresh condition of the bird suggests that the angler was captured toward the end of the period. Still it is possible that the fish, known to swim at times close to the surface, may have taken the bird there and immediately sounded, to be itself entrapped. Another possibility is conceivable—namely, that the fish had been caught at the bottom, but snapped up the merganser when the trawl engulfed the latter nearer the surface at the end of the haul.

Bigelow and Welsh (Bull., U. S. Bu. Fish., 40, Pt. 1: 527, 1925) record from the stomachs of these anglers the following birds: loons, grebes, cormorants, widgeons, scaups, scoters, mergansers, Herring Gulls, Razor-billed Auks, and guillemots. A

goose they surmise to be a bit beyond the capacity of the gourmand. Perhaps some ornithologist can provide a record to justify the use of the term 'goosefish.'

Hardly attributable to pressure during its incarceration within this soft-bodied fish is an accentuated recurvature of the merganser's beak.—STANLEY C. BALL, *Peabody Museum of Natural History, Yale University, New Haven, Connecticut.*

Some instances of bird tragedies.—Two unusual instances of tragedies to birds have come to my attention during the present year (1943). Early in April, one of our students reported the discovery of a dead Great Blue Heron (*Ardea herodias*) along the shores formed by the Sardis Dam Reservoir in North Mississippi. The bill of the heron was protruding through a good-sized fish. Apparently it had run its bill through the fish and, covering the external nares, had failed to extricate itself before it suffocated.

The second instance was related by a Mr. Dulaney of Tunica, Mississippi, who was fishing on Beaver Dam Lake near Tunica. About a hundred yards out in the lake he saw a duck, later identified as the Ruddy Duck (*Erismatura jamaicensis*), being pulled under the water from time to time. Paddling over to the spot, he snared the duck in a net and found one of its legs eaten almost off, presumably by a turtle. Due to the muddy water of the oxbow lake he was unable to be sure what had held the duck's leg. He made a special effort to try to pen the duck and heal its leg but it died a few days later. F. M. HULL, *University of Mississippi.*

Lawrence's Warbler in Maryland.—The fall migration of warblers through Maryland in 1942 was more advanced than usual. From the 19th of August until November, wave after wave of warblers was noted chiefly along hedgerows, through bottomland, and in upland forest areas in Prince George's County. Members of the *Vermivora* group were observed chiefly during the first week in September. On the fourth day of that month a Lawrence's warbler (*Vermivora lawrencei*) accompanied by several Blue-winged and Magnolia Warblers, Redstarts, Chickadees, and Titmice, was observed in thickets along an old farm field road near Bowie, Maryland.—BROOKE MEANLEY, *208 Oakdale Road, Baltimore, Maryland.*

'Courtship feeding' by the House Finch.—The House Finch (*Carpodacus mexicanus frontalis*) was not included in David Lack's list of birds practicing 'courtship feeding' (Auk, 57: 169–178, 1940). So far as we know, W. H. Bergtold's study of the House Finch (Auk, 30, 40–73, 1913) at Denver, Colorado, contains the first reference to such feeding in this species. He reported that when the female is incubating "She is then often fed by the male, the feeding being precisely similar to the feeding of a young bird, even to the fluttering of the wings, etc."

Our own observations here in Tucson, Arizona, corroborate this. During the spring of 1942, several nests were built in our back lot. We saw the males frequently bring food to the incubating females. In fact, at one nest, the male began to feed his mate about the time the first egg was laid. Sometimes the female would leave the nest and fly toward the male, as he approached, alighting in a bush a few feet away. There was always a rapid fluttering of the wings and an excited twittering or chirping by the female—a typical juvenile begging attitude—as the male fed her by regurgitation. In every case it seemed evident that the female wanted the food. She returned to the nest immediately after being fed. At one nest, which was fully exposed to the hot April sun, the female continued brooding the young longer than usual. The male consequently brought most of the food to the young. On these trips he sometimes also fed the female.

No 'courtship feeding' was noted during nest building or before. The nest building is done entirely by the female. The male follows, singing frequently from perches close to her work. At intervals both of the birds search for food in the vicinity.

Whatever the explanation devised for this pattern of feeding during incubation, the pattern itself seems to be a useful one. The female can give more attention to incubation, since some of her food is brought to her, and the male begins his 'training' early in providing the family with food.—Anders H. Anderson and Anne Anderson, *Route 5, Box 488, Tucson, Arizona.*

Observations on the courtship of four woodland birds.—During the winter and spring of 1939–40 and 1940–41, I studied the birds of a forested area along the Sangamon River in central Illinois, forty miles west of Champaign. This work was done for a graduate thesis in zoology at the University of Illinois, under the direction of Dr. S. Charles Kendeigh. I express sincere appreciation to Dr. Kendeigh and to Miss Betty Buttry, my faithful companion and aide in the field. In the course of this two-year study, I made a number of interesting observations on the courtship of four species common to the region which are discussed below.

Black-capped Chickadee, *Penthestes atricapillus.*—Courtship began in late February or early March in both years. In 1940, the Chickadees did not move about in pairs pronouncedly until March 17 but were observed in pairs frequently after the first week in March; in 1941, pairs were in evidence as early as February 16. These early pairs, however, seemed more or less temporary; the birds moved in flocks of five or six part of the time, sometimes separating into pairs and later joining the flock again. After March 1, 1941, they appeared to be paired all of the time.

The earliest date on which I heard the Chickadee's *phoe-be* song was January 12, 1941, a warm and sunshiny day on which the song was heard five or six times. Throughout February, *phoe-be* was heard on four different dates, always sparingly. After March 1, it became very common and was heard numerous times during March and the first three weeks in April.

On March 8, 1941, I observed a Chickadee calling *phoe-be* steadily from a perch in the top of a shrub. Answering *phoe-be* calls were soon heard coming closer and a second Chickadee flew in and perched on a shrub five feet from the first bird. The first bird stopped calling upon this arrival, but the newcomer continued calling *phoe-be* for two minutes. Then both birds moved together into the forest-edge where I followed them. Within five minutes, two more joined them and the four birds fed in the same hawthorn for several minutes. I imitated the *phoe-be* call and one Chickadee flew over near me. I called again, and it flew closer. Just then one of the other Chickadees flew at this bird and chased it back to the trees where the others were feeding.

On March 16, 1941, three Chickadees were observed feeding near each other, one by itself, the other two close together. The solitary bird was twice chased by one of the others when it flew too close to the third. It kept its distance thereafter, though feeding in the same tree.

On March 23, 1941, I observed two Chickadees twenty feet up in a tree on the bluff. One of them perched five feet from the other, fluttered its wings, half-hovering in the air and uttering a high squeak, and in this manner it moved to within a foot of the bird that sat quietly. At this time a third Chickadee flew into

the tree and perched near the other two. The intruder was promptly and ferociously chased by the bird which had been fluttering. The birds did not return to their former perch.

TUFTED TITMOUSE, *Baeolophus bicolor*.—In both years, Titmice began singing early in the spring—February in 1940 and January in 1941. The loudest singing and most conspicuous courtship actions were observed in April, 1940, and March, 1941; the milder temperature of 1941 may have affected the courtship dates. However, the same cycle of behavior was passed through in both years, and mating behavior was observed most frequently in the last week of April in both years.

Titmice were not spectacular in their courtship, but seemed to find mates by the calling and answering method. During the first three weeks in April, 1940, Titmice called and answered constantly and were seen often in pairs. Then they began to quiet down, singing only infrequently in late April and May. At this time, actions which resembled mating behavior were observed several times in both years but only once were the birds seen to copulate. This was on April 30, 1941, when my companion reported the following occurrence. Two Titmice sat about one foot apart, fifteen feet up in a tree. The male, identified by his actions, began to utter a high, shrill buzz and to flutter his wings very rapidly at the same time. The female sat motionless. The male kept up his performance for about three minutes until finally the female began to give the same high buzz and to flutter her wings. The male then hopped onto her back and copulation took place. These same actions, except for the actual copulation, were observed on several dates, early and late in the spring of both years. On March 9, 1940, a Titmouse perched ten feet above me and fluttered and buzzed in this same manner when I imitated its call. However, this behavior occurred most often and most conspicuously during the latter part of April in both years. Titmice gave no evidence of having territories. Throughout the spring they were scattered over the entire area and were not seen or heard near their nest until it was discovered. They seemed to feed over the whole area during incubation.

CARDINAL, *Richmondena cardinalis*.—Courtship behavior was shown at much earlier dates in 1941 than in 1940. In 1940, males were first observed chasing females on March 2, an action not recorded again until middle April. Males began singing in the middle of March and sang through April. Not until middle April were pairs in evidence. Loud singing in the first two weeks of May was conspicuous, followed by a silent period of ten days. I discovered two nests containing eggs on May 22 and May 24, respectively.

In 1941, chasing was noticed first on February 16. Throughout February and March, chasing and loud singing, first from low and later from high perches, were very evident. By March 20, Cardinals had set up territories. The first three weeks in April were quiet, with songs heard infrequently. Then on April 20 and 27, respectively, I discovered two Cardinal nests. Thus, two Cardinal nests of 1941 were built one month earlier than two of 1940. The warmer January temperatures of 1941 may have had an influence on this by promoting an earlier courtship and consequently an earlier nesting when the warmer temperatures of April arrived and the birds were already advanced in the breeding cycle.

I recorded several observations on the courtship actions of the Cardinal. On March 2, 1940, two male Cardinals chased one female up and down and around trees for twenty minutes, the female always in the lead. The two males flew at each other several times, pecking and ruffling their feathers and uttering an angry

buzzing note when in combat. Several times the males dashed headlong from the top branches of a tree toward the ground, only to swoop up again when within six feet of it. When the female stopped and perched in a tree, usually high up, the two males perched close by and took turns singing, flying at each other and diving toward the ground while the female watched them.

On March 15, 1941, a male Cardinal chased another male and drove him away; then he returned to his high perch and sang lustily for several minutes. On March 29, 1941, a male Cardinal perched one foot from a female, fluttered his wings rapidly, and moved toward her. At the same time a male from near by flew in and fluttered his wings within a few feet of the same female. The first male chased the intruder away. This appeared to be territorial behavior.

DOWNY WOODPECKER, *Dryobates pubescens*.—My few observations of courtship behavior in the Downy Woodpecker were made during the last two weeks of February and the first two weeks of March in 1941. On February 22 and 23, a male and female were observed feeding together each day. On March 2, a female drummed for half a minute, and males and females were commonly near each other. On March 8, two pairs of Downies were observed behaving in an unusual manner. The male and female of each pair took turns chasing each other, dashing in and out between trees and in circles, swooping crazily, and all the time giving a loud, rattling call. They would stop high in a tree, sit quietly near each other for half a minute, then off they would go again. Once when they landed between flights, they moved jerkily up and down the tree, the male on one side of the trunk, the female on the other, always on opposite sides. On March 9, a male and female were feeding together on the river bluff when another Downy flew in. The intruder was promptly chased by the male, which then returned to its original perch and the two birds continued feeding.—VERNA R. JOHNSTON, *Thornton Township High School, Harvey, Illinois.*

Corrections to the ornithological writings of W. L. McAtee.—The undersigned has accomplished his three-score years and, as he may not add the ten, it seems desirable to confess and correct errors (minor typographical slips excepted) in his published works. Certainly he has no desire to be grouped with those who ignore such slips or brazen them out to the bitter end—futile actions both.

1904. An interesting variation in *Seiurus*. Auk, 21: 489.

The writer desires to repudiate absolutely the childish faith in natural selection expressed in the penultimate paragraph.

1904. Warblers and grapes. Auk, 21: 489–491.

"Northward" (p. 489, line 13) should read "southward." *Notoxus* (p. 490, 11th line from bottom) is referred to as a weevil. This is an exhibition of ignorance that could have been avoided by reference to a manual which, apparently, the writer was too confident to seek. "Hymenapteron" (3 lines below) should be "hymenopteron," and the term "another weevil," dependent upon the preceding erroneous language, should read "a weevil." Following both this article and the preceding, the middle initial of the author is given as F; it is L.

1911. Economic ornithology in recent entomological publications. Auk, 28: 141.

"Carolinensis," next to the bottom line, obviously should be *vociferus*.

1911. Woodpeckers in relation to trees and wood products. U. S. Biol. Survey Bull. 39: 21.

The acknowledgment to Dr. A. D. Hopkins of the U. S. Bureau of Entomology,

while warm, is insufficient. Dr. Hopkins suggested the work and turned over an extensive collection of wood samples showing sapsucker work, as well as field notes, photographs, and literature relating to the subject. At the time we were in the throes of reducing acknowledgments and since what I was permitted to include seemed inadequate, I had a slip printed on which more generous thanks were expressed, of which I supplied a copy with each of my personal quota (100) of the publication. This pendulum, like others, oscillates and again acknowledgments have become fuller, and, perhaps occasionally, fulsome.

1912. The experimental method of testing the efficiency of warning and cryptic coloration in protecting animals from their enemies. Proc. Acad. Nat. Sci. Philadelphia: 332.

The following reference should have appeared under Judd, Sylvester D.: "Methods in economic ornithology, with special reference to the Catbird," Amer. Naturalist, 31, 1897, pp. 392–397.

1913. Two ornithological fables from Louisiana. Auk, 30: 282.

The second tale was not recognized and labelled for what it is—a rehash from Aesop.

1913. Relation of birds to grain aphides. U. S. Dept. of Agriculture Yearbook for 1912: 397.

The words "an outbreak of," after "to" in my original title were deleted by an editor, but supplied by me on all possible copies of the reprint. Their omission made the scope of the paper appear general, whereas in fact it was very specific, relating to only a single outbreak on one North Carolina farm.

1917. Some local names of birds. Wilson Bull., 29 (3): 74–95, June.

The numerous typographical errors in this paper were called to attention in a sheet of "Corrections" that was distributed as an extra page of the September, 1917, issue and so far as possible with the reprints. It should be consulted by anyone who desires to use the contribution with accuracy.

1917. Life and writings of Professor F. E. L. Beal. Auk, 34: 243–264.

The following paper should have been mentioned: The American Thrushes, Valuable Bird Neighbors. The Robin, Bluebird, and other members of the thrush family entertain with their songs and help the farmer by eating many dangerous pests. Prepared from data furnished by Prof. F. E. L. Beal, Biological Survey, U. S. Dept. of Agriculture Yearbook for 1913 (1914): 135–142, frontispiece and Pl. XV (col.).

Probably I was as influenced by indignation to omit reference to this writing as Professor Beal was to request that his name be dropped as author. The article was a casualty of the first wave of popularizing government publications. That impulse, which still rolls on, was due to criticism by a high official outside of the Department of Agriculture. Dire were the threats to scientists at that time; it was said that if they did not popularize, they ran the risk of being denied the privilege of publishing their findings; the writing would be done by others, presumably hack writers. Fortunately the full scope of this madness was never realized, though it was so deep-seated that repercussions from it have occurred up to fairly recent times.

1919. Destructive invasion by an Australian rail. Auk, 36: 418–419.

Intended as a review, this item was inadvertently placed among "General Notes."

1921. Ten spring bird lists made near Washington, D. C. Wilson Bull., 33 (4): 184, Dec.

The word "typical" (8 lines from the bottom) should be "atypical."

1932. Effectiveness in nature of the so-called protective adaptations in the animal kingdom, chiefly as illustrated by the food habits of nearctic birds. Smithsonian Misc. Coll., 85 (7): 201 pp.

"Errata" were published, and it is hoped reached all recipients of the main report. They should certainly be referred to by all persons particularly interested in the table of identifications of Lepidoptera on page 56.

1936. What is vermin? Outdoor Life, 77 (6): 40–41, 52, June.

This article was accompanied by several illustrations not furnished by me, the legends of which were of a tenor conflicting with the text. The article was largely written by Arthur Grahame, a journalist, from publications and oral remarks by me.

1938. Drained areas and wildlife habitats. U. S. Dept. of Agriculture Yearbook for 1939: 77–83.

Labelled as by F. R. Kenney and W. L. McAtee, this is an arbitrarily mixed, not a collaborated, article. I never saw Mr. Kenney nor his manuscript, either then or since. My contribution included all but the first and the last two paragraphs.

1939. Biologic balance on the farm. Soil Conservation, 5 (4): 97–99, October.

This paper was changed too much by the editor; my version was later published in the Smithsonian Report for 1939 (1941): 319–323.

1940. A venture in songbird management. Auk, 57: 333–348.

I am indebted to Dr. Harrison F. Lewis for the following corrections. The latter part of the sentence running over from page 342 to 343 should read: "for the calendar year 1930, precipitation was 29.58 inches, which is 21.51 inches below normal, or 58 per cent of normal." The figures in parentheses (middle paragraph, p. 344) are for nesting success, but from the preceding part of the sentence they would appear to be for losses. Nesting losses for the groups concerned would in each case be 100 per cent less than the figure given.

1941. Plants useful in upland wildlife management. U. S. Dept. Interior, Conservation Bull. 7.

A number of corrections will be made if and when there is another edition. The correction of most importance, required by editorial change, is in the subheading on page 8, which should read: "Plants suitable for various regions."

1942. Bartram's painted vulture. Auk, 59: 104.

The last clause was changed from my form which was: "the authority for which should be Bartram, but under the rules will be the first strictly binomial author who gave the name currency." Thus, I wished to point out that neither Lesson nor Bartram was a strictly binomial author. Acceptance of their names seems to be by votes of committees.

1942. Sylvester Dwight Judd. Auk, 59: 466.

The following item should have appeared in the bibliography: 1899. Collecting a brown thrasher's song. Bird-Lore, 1 (1): 25, February. Describes recording the song on a graphophone cylinder from which it was reproduced at the meeting of the A.O.U. in 1898. This surely put Judd among the pioneers in mechanical reproduction of bird song.

The word "pest" in the first title in the bibliography should be "pes."—W. L. McAtee, *Wildlife Service, Chicago, Illinois.*

RECENT LITERATURE

A Medieval Ornithological Treatise.[1]—Frederick II of Hohenstaufen (1194–1250), Holy Roman Emperor, King of Sicily and Jerusalem, was a man of many attainments. A patron of the arts and sciences, he was especially interested in mathematics, philosophy, and natural history. It is not surprising, therefore, that the sport of falconry claimed his attention and that he approached it in a true scientific spirit. When he set himself to write a book on falconry, he was not content to consider it a thing apart, but found it desirable to talk of birds in general before discussing raptorial birds in particular.

He was familiar with the works of Aristotle and other classical writers on natural history, but he refused to accept all their statements as fact, especially when his own experience and experiments led him to other conclusions. His book, consequently, is founded on his own studied observations rather than on the dicta of his predecessors. Nevertheless, it must be admitted that he reached many false conclusions while at the same time presenting many facts in dispute of Aristotle or genuinely new.

The 'De Arte Venandi cum Avibus' was the culmination of thirty years' preparation. It is known from a two-book edition in both printed and written state, and from a six-book edition that exists only in (multiple) manuscript form. Books II to VI are devoted entirely to falconry, treated in great detail. Modern falconers will find that much of it represents current practices today. There appears to be little in the art as it was exercised in Frederick's time that he has not carefully described and systematized.

Book I is of much more general interest. It is entitled 'The Structure and Habits of Birds' and is presented as a fundamental introduction to the study of falconry although it goes far beyond that topic. The author discusses morphology and anatomy of birds, the mechanical conditions of flight, methods of defense, plumage, molt and its purpose and process, distribution, nesting, and similar subjects. Migration is given considerable attention and it is interesting to see, in view of the false beliefs that persisted long after Frederick's time, how much he understood of this matter. He knew that some far northern birds moved only a limited distance southward while others from an intermediate region went beyond this. He ascribed migration to an effort to escape the cold, to obtain food in winter, or to avoid the freezing of water-refuges. He found that tropical species had no need to migrate. He knew of migration from mountains to valleys. He knew that migrants to warmer climates did not breed in winter quarters. He thought migration was not to fixed areas (although we know it sometimes is) but to whatever regions afforded food, mild temperatures, and security, but he noted that return was to the place of nativity where, perhaps, the birds had previously nested. He discredited the fabulous development of geese from barnacles and he had a definite opinion that vultures find their food by sight and not by smell. It is obvious that Frederick II was an observant ornithologist well in advance of his time. If his work had had adequate circulation in his day, perhaps it would not have taken so long for some of the facts that he announced to become established.

[1] Wood, Casey A., and Fyfe, F. Marjorie. 'The Art of Falconry being the De Arte Venandi cum Avibus of Frederick II of Hohenstaufen. Translated and edited by Casey A. Wood & F. Marjorie Fyfe.' Foliopost 4to, cx + 637, pls. 1–186 + 1 (2 col.), 1 fig. Stanford University Press, Stanford University, California. Price $10.00.

There is so much detail in Frederick's writings that complete discussion is not possible in a short review. The translators have supplied introductory and appended discussions and explanatory footnotes throughout. Additional chapters by Creswell Shearer, Walter Schlüter, Hugh D. Knight, and Gordon Washburn add important sidelights or corollary matter. The excellent plates show various pages of the illuminated manuscripts, views of the emperor's hunting lodges and castles as they appear today or as they appeared in Frederick's time, miscellaneous memorabilia of Frederick, pictures of falcons and falconry and other pertinent subjects and a portrait of the late senior author who died early in 1942.

The truth or falsity of most of Frederick's conclusions is now well known, although some points, like the question of the vulture's discovery of its food, are still debatable. The 'De Arte Venandi cum Avibus' is important today largely for historical reasons, but it is well to realize that a work, so largely accurate, was written in the Dark Ages. Dr. Wood and Miss Fyfe performed a valuable service in making this ancient treatise so completely available to readers who would have no opportunity to examine the rare original manuscripts in which it is found and in presenting their translation and interpretation in such an attractive form.—J. T. Zimmer.

BOOKS NOTED BUT NOT RECEIVED FOR REVIEW

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CORRESPONDENCE

Bird-banding Societies

Editor of 'The Auk':—Bird banding is a method of ornithological investigation of comparable importance to the study of birds in the bush, dead in the hand, or alive in cages. Each system of scientific study has its own particular opportunities, yields its own rewards. With each method, success comes through coöperation between students working on similar problems, learning what others have done by personal contact or by the reading of reports and published observations. Just as 'The Auk' is of great value to the members of the A.O.U., so are the banding publications of similar interest to the members of those organizations. Similarly, those who are banders could profit by the reports of the wider fields of ornithology, and all banders could profit by membership in the banding associations, each of which has its own publication of personal experiences, various investigations, helpful hints, designs of traps, and other comments and records.

There are approximately 1700 names on the list of bird-banding coöperators of the Fish and Wildlife Service, representing potential rather than active banders; of these about 325 are members of the A.O.U., about twenty per cent. The present total membership of the four banding associations is approximately 657, of whom 216, or thirty-three per cent, belong to the A.O.U. Also, only about one-third of the active banders have availed themselves of the opportunity of mutual gain by becoming members of the banding association which most closely covers their locality. Members of the A.O.U. appreciate the profit they derive from their membership, otherwise they would not belong; they accept their opportunities to coöperate in the development of the A.O.U., and they recognize their ability of increasing the value of 'The Auk' by submitting their own reports and observations for publication. There are many A.O.U. members actively interested in bird-banding research who could become affiliated with a banding association, and by their own efforts increase its usefulness and scientific publications. They undoubtedly would receive profit from the association with other banders, and help from their publications.

The bird banding associations and their officials with whom contact had best be made are as follows: NORTHEASTERN—Charles B. Floyd, Secretary-Treasurer, 210 South St., Boston, Mass.; EASTERN—Horace Groskin, Secretary, 210 Glenn Road, Ardmore, Pa., or Geoffrey Gill, Editor, 24 Overlook Drive, Huntington, Long Island, N. Y.; INLAND—Prof. O. A. Stevens, Secretary and Editor, State College Station, Fargo, N. D.; WESTERN—Mrs. N. Edward Ayer, Business Manager, 1300 Hillcrest Drive, Pomona, California, or Miss Mary M. Erickson, Editor, Santa Barbara State College, Santa Barbara, California.

The NEBBA relies upon the quarterly magazine, 'Bird-Banding' (James L. Peters, Editor)—Subscription $2.50. The Eastern publishes a monthly, 'EBBA NUS'; the Western publishes a bi-monthly, 'News.' Both the EBBA and IBBA (mimeographed) publications coöperatively go to all members of both associations—annual dues $1.00 in either association. The Western issues a quarterly mimeographed 'News from the Bird Banders.' Western membership dues are $1.00, but with joint membership in the Cooper Ornithological Club, $3.50, receiving the 'Condor.' 'Bird Banding' is in its 15th year, 'EBBA NUS' in its 6th, IBBA 'News' in its 16th, and WBBA 'News' in its 19th year, in 1944.

These organizations cover the United States and Canada. The NEBBA is principally in New England. The EBBA covers the region between the Northeastern and the Inland, with some overlapping. The IBBA extends from the longitude of eastern Ohio to the Rocky Mountains, and the WBBA beyond the Rockies.—HAROLD B. WOOD, President-pro tem, EBBA, *Harrisburg, Pa.*

A PLEA FOR THE NAME 'BLUE GROUSE'

EDITOR OF 'THE AUK':—

The aim of the A.O.U. Check-List, namely, the perpetuation of established common names and the weeding out of local or but partially established names, as well as names causing confusion, is a most commendable one. In general, I think, the Check-List has been unusually successful in this work. But let me call your attention to a most serious inconsistency in the Check-List.

Although the Check-List has regularly changed its English names to fit the names which people actually use (as in the case of Snowflake vs. Snow Bunting), it actually is trying to perpetuate seven different common names for the bird which is called Blue Grouse by the people who live with it throughout the West. These seven are Dusky, Richardson's, Fleming's, Sooty, Sitka, Sierra, and Mount Pinos Grouse. They all refer to but one bird, which is separated at present into two taxonomic species: *Dendragapus obscurus* and *Dendragapus fuliginosus*.[1]

So far as I have been able to ascertain, no one uses the "book names" of the Check-List except writers unfamiliar with the bird but familiar with the Check-List, or writers who must conform to some editorial policy. I hope that the Check-List will be corrected soon in order to bring the book names of the members of *Dendragapus* into line with the facts of congruity. For subspecific reference, I would suggest that the names *Dusky, Richardson,* etc., be added to Blue Grouse to become *Dusky Blue Grouse, Richardson Blue Grouse, Sooty Blue Grouse,* etc. The fact that we are using the same common name for the root-name of two taxonomic species is immaterial. We already do so (*e.g.,* Eastern Bobwhite and Masked Bobwhite) elswhere. My own guess is that the birds are but one species of two species-groups rather than two species.

LEONARD WING

Pullman
Washington

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[1] *D. fuliginosus* has now been united with *D. obscurus*. See the Nineteenth Supplement to the A.O.U. Check-list on page 445 of this issue.—ED.

OBITUARIES

EDWARD BARTLETT, elected a Corresponding Fellow of the American Ornithologists' Union in 1889, died in Maidstone, England, in April, 1908. He was the eldest son of Abraham Dee Bartlett, Superintendent of the Gardens of the Zoological Society of London, and was born about 1836. While still a young man he accompanied Canon H. B. Tristram on a collecting trip to Palestine and Syria. In 1865 he made a trip up the Amazon River. Leaving England in January on a sailing vessel, he arrived at Pará, Brazil, two months later and then proceeded by steamer up the Amazon to eastern Peru. With headquarters at Nauta, he made journeys up the Ucayali and Huallaga rivers and to nearby areas and returned to England in February, 1869. The birds collected on this expedition, including many new forms, were made the subjects of a number of extended papers by Sclater and Salvin in the Proceedings of the Zoological Society of London for 1866–1873.

From 1875 to 1890 Bartlett served as Curator of the Maidstone Museum and in 1891 left England for Borneo, where he became Curator of the Brooks Museum at Kushing in Sarawak. Returning home in 1897, on the death of his father, he was made a Fellow of the Zoological Society of London and devoted his attention largely to literary work.

His principal publications include an incomplete 'Monograph of the Weaver Birds (Ploceidae) and Arboreal and Terrestrial Finches,' 1888–89, of which five parts were published, and 'Life Among Wild Beasts in the Zoo,' by A. D. Bartlett, edited by Edward Bartlett, 1900. Appendix I of this volume contains 'Additional Notes and Anecdotes,' by Edward Bartlett, and Appendix II, 'Letters and Correspondence.'

On the appearance of his 'Monograph of the Weaver Birds,' in 1889, he was elected to the American Ornithologists' Union. John H. Sage, in his first report as Secretary of the Union, stated in 'The Auk' for January, 1890, p. 68, that Edward Bartlett was elected a Corresponding Member. Bartlett's name does not appear in the lists of members, apparently due to the fact that during his residence in the Far East, his address was unknown to the officers of the Union.—T. S. PALMER.

FRANZ ERNST BLAAUW, a Corresponding Fellow of the American Ornithologists' Union for fifteen years, died January 17, 1936, at the age of seventy-five. He was born at Amsterdam, Holland, October 27, 1860, and was the son of Quiryn Blaauw and Jonkur Johanna Francisca Berg. He was privately educated at Amsterdam and at the age of thirty married Jonkur Six, a member of a prominent Dutch family.

Blaauw was best known as the owner of a park at Goilust, Holland, where he maintained an extensive collection of live animals and birds and succeeded in breeding in captivity many rare species, including the Trumpeter Swan. He became interested in birds at an early age and published many notes on local species and observations on the habits of the species which he kept in his aviaries. He was the author of a well-known monograph on the Cranes, published in 1897 and illustrated by sketches made by Leutemann and Keulemans.

He was very fond of traveling and for years it was his custom to make a trip each summer to visit the menageries of the Duke of Bedford and the Gardens of the Zoological Society of London. In 1911 he visited Argentina and Chile; in 1915, South Africa; and in 1934, Kenya and Uganda. This last trip furnished the material for a volume of travel published in Dutch a few years after his return. In the spring of 1921 he visited the United States and traveled through the South

to the Pacific Coast. On this trip he met a number of American ornithologists and had an opportunity to observe many of the characteristic forest trees in which he was especially interested.

Blaauw was elected a Corresponding Fellow of the A.O.U. in 1920, a Foreign Member of the British Ornithologists' Union in 1924, and for a period of 40 years, from 1887 to 1927, was a contributor to 'The Ibis.'—T. S. PALMER.

MICHAEL ALEXANDROVICH MENZBIER, a Corresponding Fellow of the American Ornithologists' Union, died in Moscow, U. S. S. R., October 10, 1935, at the age of eighty. He was born in the Tula Government, October 23, 1855 (old style), and at the time of his death was Professor Emeritus of Comparative Anatomy at the University of Moscow. Here he had taught for half a century and had seen three generations of students pass through his classes. Among his well-known students were A. Severtzow, son of the explorer, and Doctor P. P. Suskin, an Honorary Fellow of the Union, who died in 1928.

Menzbier's work in ornithology, published in Russian, was devoted to the birds of Russia and the Russian Empire. One of his earlier publications on the 'Birds of the Tula Government,' issued in 1879, contains notes on the occurrence and local abundance of some 220 species. His 'Geographical Distribution of the Birds of European Russia' appeared in two editions, in 1882 and 1892, his 'Revue Comparative de la Faune Ornithologique des Gouvernements de Moscow et de la Touls' in 1883, and his introduction to Zarudnyi's 'Oiseaux de la Contrée Trans-caspienne' in 1885. In 1887 he published his 'Vergleichende Osteologie der Pinguine in Anwendung zur Haupteintheilung der Vögel,' in which he proposed a new subclass Eupodornithes for the penguins. A quarto work on the 'Ornithologie du Turkestan et du Pays adjacentes,' based on the collections of Severtzow, was planned to appear in six volumes but only one was published, between 1888 and 1894.

Menzbier, 'Nestor of Russian ornithology,' was honored at home and abroad. He was a Fellow of the Russian Academy of Sciences, in which his collection was deposited, an Honorary Member of the British Ornithologists' Union and the Deutsche Ornithologische Gesellschaft, and a Corresponding Member of the Zoological Society of London, and was one of the twenty Corresponding Members elected in 1884 at the second meeting of the A.O.U.—T. S. PALMER.

HARRY FORBES WITHERBY, an Honorary Fellow of the American Ornithologists' Union, died December 11, 1943, at the age of seventy. He was the second son of Henry Forbes Witherby of Burley, Hants, England, and was born October 7, 1873. Soon after leaving school he entered the publishing firm of Witherby and Company. He was an active and enthusiastic field ornithologist, particularly interested in the avifauna of Spain, and took many trips to out-of-the-way places, including the Kola Peninsula, Persia, and the White Nile. The results of this last trip appeared in 1902 in a volume entitled 'Bird Hunting on the White Nile.'

In 1907 he founded the magazine 'British Birds,' which he continued to edit until his death, and in 1909 he organized the British Birds ringing scheme which has done so much to increase the knowledge of English bird migration. In 1912, with others, he published the 'Hand List of British Birds' and in 1912–14 a 'Practical Handbook of British Birds.' In 1938–41 he brought out his most ambitious work, a 'Handbook of British Birds,' in five volumes, said to be the best

book on the birds of any country. He was one of the first English ornithologists to adopt the use of trinomials.

Witherby was elected a member of the British Ornithologists' Union in 1897, a Corresponding Fellow of the American Ornithologists' Union in 1921, and an Honorary Fellow in 1928. He served as chairman of the British Ornithological Club from 1924 to 1927, was president of the B.O.U. from 1933 to 1938 and, on his retirement, was awarded the Godman-Salvin medal for work in ornithology. His collection of British and European birds was sold to the British Museum and the proceeds given to the British Trust for ornithology.—T. S. PALMER.

GEORGE SHIRAS, III, a Member of the American Ornithologists' Union, died at Marquette, Michigan, March 24, 1942, after a long illness, at the age of eighty-three. Born at Allegheny, Pennsylvania, January 1, 1859, he was the son of George, Jr., and Lillie E. (Kennedy) Shiras and was educated at Cornell and Yale Universities. He graduated from Cornell in 1881, took his law degree at Yale in 1883, and received the degree of Sc.D. from Trinity College in 1918. For about ten years after graduation he was associated with his father in the practice of law, until the appointment of the latter, in 1892, as an Associate Justice of the U. S. Supreme Court. After serving a term as Member of the Pennsylvania House of Representatives in 1889–1890, George Shiras, III, was elected a member of the 58th Congress and served from 1903 to 1905. It was at this time that he introduced his bill for the protection of migratory birds, the basis of which was explained later in his brief on Federal jurisdiction of migratory birds, published in 'Forest and Stream' for Nov. 24, 1906. He was a constant student of the Constitution and it was his custom to present his conclusions in the form of briefs which were set up in galley proof for further study and revision. His Migratory Bird Bill which later became the Federal Migratory Bird Act of 1913, although held unconstitutional by the lower courts, paved the way for the Migratory Bird Treaty. Finally, Shiras had the satisfaction of seeing his ideas vindicated by the Supreme Court which sustained the validity of the Migratory Bird Treaty Act of 1918.

Shiras maintained a summer home at Marquette on the Upper Peninsula of Michigan and a winter home at Ormond Beach on the east coast of Florida. From time to time he made various trips in search of opportunities to photograph birds and big game. In 1904 he made a trip to the Bahamas with F. M. Chapman, in 1910 to the Tampico region in Mexico, and later to Hawaii. He was an expert with the camera and developed a highly successful method of taking pictures of animals at night by means of flashlight. He also succeeded in arousing the interest and assistance of Norman McClintock who became an expert in wildlife photography. His experiences were described in 'Hunting Wild Life with Camera and Flashlight,' a work in two volumes which appeared in 1935 and 1936. His collection of photographic negatives was presented to the National Geographic Society.

Shiras was elected an Associate of the A.O.U. in 1907 and a Member in 1915. In addition to holding membership in the Union, he was a member of the Boone and Crockett Club and the Explorers' Club. He served as vice-president of the American Game Protective Association, a trustee of the National Geographic Society, and a member of the Advisory Board of the Biological Survey of the U. S. Dept. of Agriculture which issued the regulations for the protection of migratory birds.—T. S. PALMER.

JOHN KINGSBURY BURGESS, an Honorary Life Associate of the American Ornithologists' Union, died December 10, 1941. Mr. Burgess joined the Union as an Associate Member in 1898. He was born in Dedham, Massachusetts, January 20, 1863, a son of Edward P. and Mary B. (Kingsbury) Burgess, and was graduated from the Massachusetts Institute of Technology in 1886. He was a mining engineer in Tennessee for some years, but most of his life was spent in Dedham, where he ran the family farm of Broad Oak. He served as selectman of the town, 1921–27, five years as chairman of the board, and he represented his district in the state legislature from 1925 to 1932.

John Burgess's interest in birds was that of an intelligent amateur who passed much of his time in the country, joined to that of an ardent and observant sportsman who specialized in duck hunting. Most of his shooting was done on Martha's Vineyard, and about 1912 he joined with a group of Boston men to form the Tisbury Pond Club, which acquired a farm on Great Tisbury Pond on the southern shore of that island. He assumed active management of the club, and for all the rest of his life he spent much of his time there, both in and out of the shooting season. He was much interested in the habits and movements of the ducks and geese on the island, and he kept a full record of his observations, which was included in the club log. He also did his best to instill proper ideas of conservation into the minds of his fellow members, some of whom in the early days did not appreciate the dangers of overshooting.

The writer's acquaintance with John Burgess, begun in boyhood, ripened into friendship when for several years in the late nineties he and his wife were near neighbors of ours in West Roxbury. We took many bird walks together. He had great natural charm of a quiet kind and was much loved by all who knew him. Though engaged in business and professional matters for some years, as well as in his public duties, he was most at home and happiest in leading the life of a working gentleman farmer at Broad Oak on the banks of the Charles River in Dedham and in the frequent visits he made to the Vineyard.—FRANCIS H. ALLEN.

CHESTER SESSIONS DAY, an Honorary Life Associate of the American Ornithologists' Union, died in Boston, Massachusetts, on January 31, 1944. He had been in failing health for the past few years, with various complications which finally caused his death.

He was born in Roxbury, Massachusetts, on January 15, 1867, a younger son of Moses Henry Day and Sarah Frances Brown, both of Roxbury. After attending grammar schools in that town, with a year or two at the Roxbury Latin School, he entered the English High School and graduated with the class of 1886. He began work in the broker's office of Brewster, Cobb and Estabrook, but left about 1890 to take an interest in the C. J. Jager Co., in the business of installing windmills and other waterworks. He left the Jager Co. about 1918, and since that time was employed as broker's clerk and salesman with Boston brokerage houses, most recently with Draper, Sears and Co.

In earlier life, he had held memberships in the Boston Athletic Association, the Algonquin Club, and the Brookline Country Club, being fond of golf and other outdoor sports. He was an ardent sportsman and a good shot, and he usually spent parts of his vacations on Cape Cod, shooting shorebirds when they were in season and hunting quail on the uplands, for which purpose he had a good bird dog.

His interest in birds began in boyhood, making collections of eggs and birdskins.

In later years, his interests centered in collecting the eggs of hawks and owls, which he accumulated in large series. A few years before his death, he presented his collection of eggs to the Museum of Comparative Zoölogy in Cambridge. His early associate in ornithology was Herbert K. Job, who made a trip with him to the Magdalen Islands and the Bird Rocks.

I first met Chester Day at Oak Lodge, on the east coast of Florida, where he had come in 1902 to join Mr. Job and me in photographing and collecting birds and eggs on Pelican Island and in the heron colonies in the interior marshes. The following year, we explored extreme southern Florida, including the Cuthbert Lake rookery, the Cape Sable region and some of the Keys, with Guy Bradley, the martyred warden, as guide. In 1905, the same trio spent the nesting season in southwestern Saskatchewan, living on the ranches, driving many miles over the then open plains and collecting in the timber belts along the streams and around the lakes and sloughs, which in those days were teeming with bird life.

On November 12, 1907, he was married to Bertha Stevens of Malden, and settled down to quiet home life. From that time on, he made no more long trips, but for the next thirty-five years he seldom failed to spend a few days with me each season hunting for nests of hawks and owls in our local woods. He had great enthusiasm for this, was very keen and persistent in finding the nests and was a good climber; he kept this up as long as he was able to walk.

Chester Day was a cultured gentleman of unusual refinement and always immaculate in appearance, even while camping in the wilds of Florida. His delightful personality made him a host of friends, to whom he was always most loyal. His gentleness and quiet modesty often restrained him from publicity and prevented his name appearing in print. But among those who knew him best he was ever a charming companion and a most welcome guest.

He is survived by his widow, a daughter, Carolyn Thornquist, a granddaughter, a sister, Miss Annie F. Day, and a brother, Nathan B. Day.—A. C. Bent.

William Butts Mershon, a Life Associate of the American Ornithologists' Union, and one of the well-known sportsmen naturalists of our country, died at his home in Saginaw, Michigan, on July 12, 1943. He was born at Saginaw on January 16, 1856, the son of Augustus Hull and Helen (Johnson) Mershon. During the past few years he was confined to his home by illness, but with this exception he had enjoyed an active, vigorous, outdoor life. The grandfather came to Michigan in 1854 and started a planing mill at Saginaw, which later, through the invention of the band saw by Mershon's father, became one of the largest knock-down wooden-box establishments in the country. When seventeen years old, Mershon entered into this work, and by 1876 began the manufacture of, and dealing in, lumber.

On January 9, 1889, Mershon married Catharine Calista Morse of Detroit, whom he leaves, together with three sons, William Briggs, Edward Lowery, and John Morley. His daughter, Marion (Mrs. C. H. Sayre), died a few years ago.

As their president or director, Mershon has been associated in a number of companies interested in lumber, salt, and copper, especially in Michigan, Arizona, and Idaho. For many years he was a leader in the civil, social, and cultural life of his community. In civic life he was mayor of Saginaw, 1894–95, member of the Park and Cemetery Commission for five years, State Forestry Commissioner for two years, and member of the Third Regiment of Michigan National Guard for six years. Among clubs or associations, he was a Life Associate of the American Orni-

thologists' Union and a member of the Michigan Forestry Association, the Boone and Crockett Club, the East Saginaw Club, the Saginaw Club, and the Warren County (Arizona) Club.

He was author of 'The Passenger Pigeon,' 1907, and 'Recollections of My Fifty Years Hunting and Fishing,' 1923. As sportsman and salmon angler he contributed many articles to magazines and periodicals on shooting and fishing. In these books and essays we find much of lasting interest and of value relating to wild life, especially of worth as it is first-hand information from a careful observer. He found in hunting and fishing trips a real opportunity to make strong friendships and to become acquainted with, and to understand, his fellow man. He maintained a fishing cabin on the Ausable River, Michigan, and one on the Cascapedia River in Quebec, where he and his friends fished for trout and salmon annually for fifty years.

Because of his intimate knowledge of the game country and his wide acquaintance among sportsmen and naturalists, he was able to give us an insight into the decadence and later extinction of the wild pigeon, and a picture of the abundance of game before the advent of improved methods of capture and the increasing flood of sportsmen of modern times. Mershon was a perfect example of those sportsmen-naturalists who, though not profound in their knowledge of wild life, were keen in the love of it. In the early days, when game in abundance was near the saturation point, they may have overkilled at times in the excitement of the chase, but later when the ebb was in evidence they were among the foremost in advocating and developing conservation. In his conversations and writings, in referring to a recent trip, he often would briefly state that he secured a fair bag of game or creel of fish, and then dwell for an hour or more on the beauties of nature and the interesting things of the woodland and field which he had observed on the eventful day. He may have been attracted by a group of migratory birds, containing several species, as they drifted leisurely through the shrubbery, uttering their conversational lispings while in quest of food. The richness of the autumnal foliage appealed to him and received his share of admiration, as did the wild flowers that flourished in the dale and along the borders of streams. Even the purple softenings of the shadows of departing day with a favorite marsh in the foreground were duly noticed as one of nature's attractive charms.

His winning personality, tolerant spirit, and versatile interests brought to him scores of friends and admirers, and those of us who knew him intimately, and who still remain here, will miss his magnetic companionship, kindly advice, and cordial greetings—fond memories of the past.—A. K. Fisher.

Leonard Elmer Burnett, an early Associate of the American Ornithologists' Union, elected in 1903, died at Fort Collins, Colorado, March 16, 1904. He was born in Luray, Missouri, and at an early age moved to Colorado when his family settled near Loveland. A few years later they moved to a ranch near Little Medicine, Wyoming, which was Leonard's home until a short time before his death. From early life he was interested in wild life, spent much time in the field and learned the art of taxidermy in which he became quite proficient. The greater part of the last two years of his life was devoted to collecting material for the museum of the Colorado Agricultural College while acting as collector and taxidermist for that institution. After his death his private collection was presented to the public library of Fort Collins.

From early years he suffered from chronic pulmonary troubles, and ambition and love of work often caused him to exert himself beyond his strength. "His cheerful disposition and kindly attitude endeared him to all with whom he came in contact."

Burnett apparently published little. He contributed notes and observations to Knight's 'Birds of Wyoming,' 1902, a note to 'The Auk' for 1904 recording the capture at Fort Collins of a 'Whip-poor-will (*Antrostomus vociferus*), a New Bird for Colorado,' and a posthumous article to 'The Condor' for July, 1905, on 'The Sage Grouse, *Centrocercus urophasianus*,' illustrated by a photograph of a specimen which he had mounted. In a footnote on page 107 of this article is added a brief biographical note of the author by S. A. Johnson.—T. S. PALMER.

HARRY ALVIN CASH, an Associate of the American Ornithologists' Union for 30 years, died of pneumonia, after a brief illness, at his home in Providence, Rhode Island, January 11, 1928, in his 58th year. He was the son of Alvah C. and Florine (Perry) Cash and was born in Pawtucket, Rhode Island, May 7, 1870. In his later years he was a taxidermist and furrier and a member of the firm of Angell and Cash. He had a large private collection of birds and furnished groups of birds and mammals to the American Museum of Natural History in New York, the Pittsfield (Massachusetts) Museum and the museum in Roger Williams Park in Providence.

Mr. Cash was much interested in raising pheasants and reared a number of these birds in an enclosure behind his house. He was also interested in collecting data on the occasional winter flights of the Snowy Owl. During the flight of 1902 he reported 18 specimens for Ruthven Deane's summary, which appeared in 'The Auk' for July, 1902, and for the flight of 1926–1927 he contributed records of 106 specimens for Dr. Gross's account in 'The Auk' for October, 1927.

He was elected an Associate in 1898 and, in addition to holding membership in the Union, he was an Associate of the American Museum of Natural History and a member of the Fish and Game Association.—T. S. PALMER.

WILLIAM WELLINGTON COE, an Associate of the American Ornithologists' Union, elected at the first meeting, died at his home in Portland, Connecticut, April 26, 1885, at the age of forty-three. He was born at Madison, Connecticut, March 6, 1842, and at the time of his death was President of the First National Bank of Portland of which John H. Sage was then cashier. He and Sage were not only business associates but had been friends from early boyhood. Both were enthusiastic bird students and active bird collectors. When Sage was employed in an insurance office in Hartford, Coe, who was then cashier in the bank at Portland and several years older, induced him to accept a position as teller in the bank so that they might be together and better able to devote their spare time to bird study in the field. Thus began their business association which lasted as long as Coe lived.

Coe's observations were published in a series of notes between 1878 and 1883, the first on 'Spring Notes' in 'Forest and Stream,' and eight others in the 'Ornithologist and Oologist.' All were based on the occurrence of birds which were rare or uncommon in the Portland area. Later these notes were incorporated in Sage and Bishops's 'Birds of Connecticut' which appeared in 1913. Some of them are of considerable interest and well worth reading at the present time—for example, his 'Curious Nesting Places' in the 'O. and O.' for 1882 (7: 183–184), in which he described the nest of a Pewee built on a brake under the guard of a

ferry plying across the Connecticut River between Middletown and Portland, and the attempt of a pair of Bluebirds to build a nest on a ledge in his kitchen chimney. This chimney was in daily use so that the birds could only continue their nest-building activities early in the morning before the fire was lighted. He also refers to the unusual flight of Barred Owls in the winter of 1882–1883, when specimens were brought in in such numbers that he and Sage had difficulty in taking care of them.—T. S. PALMER.

NATHANIEL ATWOOD FRANCIS, an Associate of the American Ornithologists' Union for ten years, died in Boston, Massachusetts, June 10, 1921, at the age of sixty-two. He was the son of Tappan Eustis and Helen (Shurtleff) Francis and was born in Brookline, Massachusetts, February 25, 1859. His education was received at G. W. C. Noble's School and the Harvard Law School, where he took special studies from 1879 to 1881.

At the age of twenty-one, Francis was elected a member of the Nuttall Ornithological Club and at this time was described by C. F. Batchelder in his history of the Club as "almost a genius at nest hunting, genial and interesting at the Club meetings." But in spite of his activity in the field, he seems to have contributed only two brief notes to the Nuttall Club's 'Bulletin,' one in 1881 on the 'Breeding of the Acadian Owl in Eastern Massachusetts' and the other in 1883 on 'Wilson's Snipe (*Gallinago wilsoni*) Nesting in Massachusetts.' Upon completion of his law studies, he entered on the active practice of his profession, which evidently demanded all of his attention. He was elected to the Union in 1893, but his membership lapsed in 1896. He was again elected in 1914 but apparently published nothing in 'The Auk.'—T. S. PALMER.

ALBERT BURTON GRESHAM, an Associate of the American Ornithologists' Union and a major in the Winnipeg Grenadiers, died in action in China, during the Japanese attack on Hong Kong, December 24, 1941. He was born in Perth, Australia, on March 12, 1905, the son of Mr. and Mrs. Jonathan Gresham. His education was received in the public school at Elkhorn, Manitoba, and at St. John's High School and the University of Manitoba, Winnipeg. On October 7, 1937, he was married to Miss Margaret Kathleen Marr of this city.

Even as a boy, Major Gresham showed a deep interest in natural history. Later in life, birds became a ruling passion and at every opportunity he studied them in their native haunts across the Great Plains and in the Rocky Mountains. He was a keen bird bander and, to an even greater extent, devoted himself to wildlife photography in which he became an expert. His work along these lines was widely known and admired. This was particularly the case with his celebrated photographs of Blue Geese which were taken from the ground and by airplane during the spring migrations in Manitoba.

Gresham was elected to membership in the American Ornithologists' Union in 1939. He was also a member of the Ottawa Field-Naturalists' Club, the Wilson Ornithological Club, and the Natural History Society of Manitoba. He joined the last-named society as a young man in 1922 and successively held the offices of ornithological secretary, ornithological chairman, mammalogical chairman and vice-president. He was a newspaperman with the 'Winnipeg Free Press' for many years, to which paper he contributed numerous illustrated articles on nature. He also wrote for many other popular and scientific periodicals. He was recognized as one of the best amateur naturalists in Western Canada.

In 1926 he joined the militia as a private and, with his usual enthusiasm, served

the force well and gained steady promotion. After the outbreak of war, he served in Jamaica for more than a year and then, with the rank of major, proceeded to Hong Kong in November, 1941. He was a lovable character whose death was an extremely sad event to a multitude of friends. He is survived by his wife, mother, two sisters, and a brother.—J. DEWEY SOPER.

NORMAN JAMES, an Associate of the American Ornithologists' Union for 25 years, died in Baltimore, Maryland, January 24, 1939, at the age of seventy. He was the son of Henry and Amelia B. James and was born in Catonsville, Maryland, September 2, 1868. He received his early education in the schools of Baltimore, then attended the Episcopal High School in Alexandria and the Phillips Exeter Academy, where he graduated at the age of eighteen. He graduated from Yale University in the class of 1890. During his college days he developed a deep interest in reading and began to acquire books on sport, hunting, and Americana until his library developed into one of the outstanding collections of its kind in this country.

Upon the completion of his college course, he entered the lumber business established by his father and remained in it during the rest of his life. He had other business interests but still found time to serve as director of several commercial and financial organizations. Always keenly interested in all forms of sport, he took many hunting trips to distant places in this country and abroad but apparently published little or nothing on birds.

James was elected an Associate of the Union in 1913 and a Member of the Boone and Crockett Club in 1915. He was survived by his widow, Isabella L. Hagnar James, who had formerly served as social secretary in the White House during the administrations of Theodore Roosevelt and Woodrow Wilson, and by a son, C. Magnell James, Director of the Peale Museum of Baltimore and a daughter, Mrs. Janon Fisher, Jr., of Eccleston, Maryland.—T. S. PALMER.

NOTES AND NEWS

The A.O.U. has suffered the loss of Dr. C. E. Hellmayr, Honorary Fellow, who died in Switzerland on February 24, this year; of E. C. Stuart Baker, Honorary Fellow, who died in England in April; and of Dr. Dayton Stoner, Member, who died in Albany, N. Y., on May 8.

REPRINTS OF THE 'NINETEENTH SUPPLEMENT TO THE A.O.U. CHECK-LIST' will be available in limited number at twenty-five cents per copy. Owing to present paper shortages, only a sufficient number will be printed to supply the demand, after which the type will be distributed. Readers who wish copies are therefore advised to send their order with remittance promptly to The Business Manager of the A.O.U., 1120 Locust St., Philadelphia, Pa. Some delay in distribution will be unavoidable since the orders must be in hand before printing is commenced.

THE 1944 ANNUAL MEETING OF THE A. O. U.

The place and character of the 1944 meeting of the Society is under discussion by the Council but has not yet been decided. It appears highly improbable that a general meeting can be held this year owing to the continuation of conditions that prevailed in 1943. A restricted business meeting of Council, Fellows, and Members is in prospect. In any case, the necessary advance notices will be distributed by the Secretary. Wherever such meeting is held, it is hoped that the necessary quorums may be present to permit the transaction of necessary business.

THE AUK

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ORGAN OF THE AMERICAN ORNITHOLOGISTS' UNION

Manuscripts should be typewritten if possible. As an aid in bibliography, title should be brief, within one printed line. References to literature may be inserted in parentheses at the appropriate places in the text, or listed at the end of the paper rather than in footnotes. Roman numerals and extensive tables are to be avoided. Line drawings intended for text illustrations should be in India ink; halftones can only be printed as plates. Longer articles should have a brief summary at the end. Except on request, no proofs of 'General Notes' or short communications will be submitted to authors.

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All articles and communications intended for publication and all books and publications intended for review should be sent to the Editor,

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TEN YEAR INDEX

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